

JPRS 78717

11 August 1981

USSR Report

ECONOMIC AFFAIRS

No. 976



FOREIGN BROADCAST INFORMATION SERVICE

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CONTENTS

ECONOMIC POLICY, ORGANIZATION AND MANAGEMENT

- Review of Fedorenko's Book of Optimal Functioning of Economy
(T. V. Ryabushkin; EKONOMIKA I MATEMATICHESKIYE METODY,
May-Jun 81)..... 1

PLANNING AND PLAN IMPLEMENTATION

- Gosplan Official Explains Planning Cost Indicators
(V. Kotov; PLANOVOYE KHOZYAYSTVO, Jun 81)..... 6
- Review of Kiperman's Book on Industrial Statistics
(V. Adamov; VESTNIK STATISTIKI, Jun 81)..... 15

INVESTMENT, PRICES, BUDGET AND FINANCE

- Current Credit Levers in Soviet Economy Discussed
(M. Pessel'; EKONOMICHESKIYE NAUKI, May 81)..... 21

INDUSTRIAL DEVELOPMENT AND PERFORMANCE

- Economist Explains Production Dynamics
(L. Gorenman; PLANOVOYE KHOZYAYSTVO, May 81)..... 30

RESOURCE UTILIZATION AND SUPPLY

- Gossnab Official Urges Recycling of Industrial Waste
(V. Ksintaris; PLANOVOYE KHOZYAYSTVO, Jun 81)..... 41

REGIONAL DEVELOPMENT

- Party Secretary Discusses Overall Regional Development
(P. Fedirko; PLANOVOYE KHOZYAYSTVO, Jun 81)..... 48

REVIEW OF FEDORENKO'S BOOK ON OPTIMAL FUNCTIONING OF ECONOMY

Moscow EKONOMIKA I MATEMATICHESKIYE METODY in Russian No 3, May-Jun 81 pp 617-620

[Review by T.V. Ryabushkin of book "Voprosy optimal'nogo funktsionirovaniya ekonomiki" [Questions of Optimal Functioning of the Economy] by N.P. Fedorenko. Moscow, Nauka, 1980, 200 pages]

[Text] The reviewed monograph sums up a certain period of research on development of theoretical problems of optimal functioning of the economy. The position on the integrated character of the economic systems emphasized by the author throughout the entire book leads to the important conclusion that almost any improvement or perfecting of one of its local components inevitably raises the question as to whether it would be useful from the global economic point of view. Economic-mathematical researches in our economic science have contributed to a significant improvement in the methods of long-term and current planning of production of individual sectors of industry and its distribution on the territory of the country, of optimization of transport services, determination of the most advantageous specialization of regions and so on. As a result methods of calculations were developed that by the present time have encompassed almost all sectors of the national economy, regional facilities and the like, which make it possible to compile production plans ensuring the fulfillment of targets with lower current and capital outlays or to achieve a significantly bigger economic effect with the same resources. Economies or subsequent contributions sometimes are measured in hundreds of millions of rubles.

There remain unclear after each such elaboration: do obtained savings call for a reduction of the production development fund in a given sector, is the increased return connected with increased production in use sectors, can a given region decide on expanding production in the more profitable sector as by combining a new planning decision with the cost-accounting interests of sectors and regional facilities? Analysis of occurring situations gives rise to the thought that it would be impossible to answer such questions on the basis of a local formulation of a problem. From this there stems the problem of interrelated creation of mechanisms of planning and cost-accounting management so that in the case of adoption of local decisions national-economic and local interests coincide and guide the economic, social and scientific-technical activity of the subdivision for the attainment of end goals for all of society.

A rational synthesis of a system of management possessing such properties is unprecedented in terms of the complexity of the problem, the actual formulation of which is a reflection of the tremendous possibilities of an improvement of the mechanism

of functioning of the economy that is inherent in the socialist economic system. The solution of this problem will probably occupy a whole period of scientific search and verification of its results in the practice of national-economic planning and management. But it is already possible to speak today of the fundamental results obtained on the difficult road of strict scientific synthesis of the most effective (optimal) functioning of the economy. They are summarized in the reviewed monograph.

What then are the basic theoretical positions of optimal planning of the economy which are brought to the fore in the book by Academician N.P. Fedorenko and not only make a contribution to economic theory but also create a serious scientific foundation for the further improvement of planning and management of the national economy at all its levels and in all contexts?

The first of them consists of a clear introduction into economic theory of a normative, purposeful principle to the highest degree in accord with the needs of the practice of planning of the country's economic and social development. Despite the unanimity of all economists to the effect that the requirement of maximization of well-being and conditions for the all-round development of the individual stems from the basic law of socialism, there prevailed in many concrete studies prior to the beginning of the '60s a descriptive, ascertaining approach without a clear grasp of the end aims of economic and social development. The combination of resource and goal aspects of the process of social reproduction, the placement of the categories of social usefulness and the criterion of optimality as its quantitative measure in the foreground elicited sharp objections on the part of certain researchers. At the present time, the results of the aforesaid scientific developments are winning increasingly greater recognition and favorable prospects are coming into being for their transformation into effective instruments of attainment of the end goals of economic and social development. V.I. Lenin's words to the effect that theory should be understood "not in the sense of just an explanation of the past but in the sense of fearless prediction of the future and daring practical activity for its realization" (Lenin, V.I. "Poln. sobr. soch." [Complete Works], Vol 26, p 730), cited by Academician N.P. Fedorenko (p 32) sound quite up to date.

The second basic condition of optimal planning is the necessity for a systems construction of economic theory in which studies on the macrolevel and their results are used for the basing of intersectorial proportions; the latter then serve as the basis for planning of multisectorial complexes, sectors, economic regions, associations and enterprises. The structure of management of goal programs must give to all these developments a maximally effective character that is aimed at the realization of end national-economic tasks. Local developments in their turn, taking into account the whole aggregate of scientific-technical possibilities and social conditions of the development of the corresponding facilities, must correct and render in detail the original alternatives of planning decisions and create conditions for their realization, including on the basis of economic contractual ties and systems of material-technical supply. Only with such a condition is it possible to ensure balance and effectiveness of plans at all levels and in all contexts and consequently the functioning of the national economy as a unified complex.

The practical work of planning actually has long been guided by these principles, but theoretical studies at different levels have been isolated and have not always provided a way to the solution of acute practical problems of raising the degree of

of balance and integration of plan solutions. The theory of optimal planning first developed the principle that could be formalized of such reciprocal coordination of plan solutions and mathematical and algorithmic methods of realization. This makes it possible, as Academician N.P. Fedorenko writes, "to overcome the relative incompatibility of the levels of competence of higher and lower parts of management in the adoption of solutions requiring all-round accounting of the global and local interests of the different elements of the social-economic system" (p 131).

The third basic position is the dialectical unity of the plan and the economic mechanism of functioning of the economy. Let us first indicate the relation of price levels to the dual evaluations of the task of determination of the optimal plan. For the first time the method of analysis of models of optimization of operational systems showed the complex nature of price, reflecting not only the direct outlays of a given production operation but also the use value of the products it produces and the economic damage done by the withdrawal from other potential users of the resources expended by it.

The positions on the complex synthetic nature of prices are being intensively assimilated by the practice of Soviet price formation. It is sufficient to be reminded of the reflection of use properties and the limitation of new products for production use in so-called graduated [stupenchatyye] prices, dynamically changing between their upper and lower limits, of the establishment of capital payments and rent payments in a number of extractive sectors, discussion of questions relating to the introduction of payments for labor resources and so on.

Mention should further be made of the theoretical basis of the need of discounting of different-time expenditures for their commensuration, analysis of the nature of the norm of effectiveness of capital investment resulting in recommendations on the establishment of a single value for it in all sectors. The whole group of pertinent studies found important use in planning practice in the case of decentralized establishment of effectiveness of technical-economic solutions.

Finally, it is impossible not to mention elaboration of problems of a local criterion of optimality of operational facilities making it possible to tie in the cost-accounting interests of associations and enterprises with national-economic tasks and aims, questions of the nature and functions of the credit-financing mechanism, which constitute an important prerequisite of approximation of conditions of functioning of operational elements to the requirements of the principle of ability to pay its way and so forth. All these problems of a greater economic content can be newly formulated, with new approaches being made to their solution on the basis of unified methodological principles of optimal planning.

In the conclusion of the book, Academician N.P. Fedorenko emphasizes the principal significance of mathematical methods and computer equipment for the development of economic science. "The concept of an economic optimum," he writes, "has not only economic and social properties but also certain mathematical characteristics, which make impossible its inclusion in a system of economic categories outside the apparatus of higher mathematics, cybernetics and systems analysis. The use of computers for the solution of practical problems of economic optimization without the development of corresponding mathematical models is impossible" (p 140).

Of course, one should not think that the development and practical use of mathematical modeling would in itself ensure a marked improvement in the quality of planning and functioning of the economic mechanism. The decisive element remains qualitative analysis of social-economic processes. And the role in this of fundamental political-economic generalizations and of thorough study of the specifics of new political, social and economic phenomena at different levels of corresponding hierarchical structures is difficult to overestimate. But without mathematization of this field of knowledge, it would be impossible not to reinforce the results of qualitative analysis in the form of a strict scientific consensus, creating a solid basis for the all-round development of research and not to make a bridge from theoretical searches to the solution of numerous problems of adoption of solutions for different levels of management of economic and social development. With the methods of analysis, economic science has approximated mathematical structures that are characteristic of disciplines of the natural cycle. It is important to underscore that mathematization of economics serves not just as a means of improving the efficiency of theoretical developments. It serves first of all and principally as a tool for joining them to the requirements of the practice of planning and management at all levels and in all contexts.

Despite the relatively small size of the book, Academician N.P. Fedorenko has succeeded in making a rather broad exposition of this theme. He dwells primarily on the fundamental researches of the classical writers of Marxism-Leninism and points to the much greater possibilities of applying mathematics to economics created by socialist production relations compared to capitalist. "A most important step," he writes, "in the direction of creating an integrated model of the functioning of the national economy is to be found in the reproduction schemes of K. Marx.... The chief merit of Marx's schemes is that they were used for the first time in the history of economic thought in carrying out on a truly scientific basis an organic synthesis of qualitative and quantitative aspects of research; the schemes of expanded reproduction fully retain their pertinence to the present day. This applies first of all to the determination of conditions and, what is particularly important, to the degree of balance (proportionality) of intersectorial exchange and to the determination of prerequisites (and hence—degree) of growth of the economic systems in time" (pp 144-145). And subsequently going to the Leninist stage of development of reproduction schemes, he says: "Lenin found it necessary to change in the original system of premises lying at the foundation of Marx's schemes of expanded reproduction only one. In introducing in place of an immutable a rising organic capitalist structure..., he showed not only the possibility but also the historical inevitability of growth of the internal market, which is formed by accelerated demand for... the means of production.... V.I. Lenin, in addition to the characterization of organic capitalist structure, introduces another characteristic as a variable, namely—the norm of accumulation, which is of special significance for socialism...

Thus, Lenin enriched quite significantly the number of dynamic structural characteristics presented in schemes of expanded reproduction" (pp 145-146).

Academician N.P. Fedorenko traces the numerous branches of extension of economical-mathematical research: from the first balance of a national economy in the world compiled by the USSR Central Statistical Administration for the 1923-1924 economic year to the present comprehensive apparatus of intersectorial analysis and from the first model of national-economic dynamics in over-all indicators (1928) to present-day methods of macroeconomic forecasting with elements of management as well as from the first formulations of optimization problems for local operational facili-

ties to today's developed constructions of systems of optimal economic functioning and the automated system of plan computations and so forth.

The author describes simply and comprehensively the main directions of present-day practice of economic-mathematical modeling: improvement of sectorial current and long-term planning, going on to planning of multisectorial complexes, regional planning and so forth. Academician N.P. Fedorenko dwells especially on the national-economic level of planning and its combination with sectorial and territorial sections of the plan. Returning to the automated system of plan computations, he writes: "The share of calculations done according to models, first of all the automated system of plan computations for the annual plan has so far not reached 10 percent of the total number of plan tasks; for the five-year plan, this figure grows to 35 percent and for the long-term plan--to 43 percent.... The impact of the automated system of plan computations grows with the use of economic-mathematical models and the production of optimal plans" (p 171).

The reviewed book as a whole gives a rather complete picture of the large scope of economic-mathematical research in our country, the big contribution made by it in development of economic theory as well as the practical work of planning and management of the national economy. A worthy appreciation of it is (as in the case of the monograph "Nekotoryye voprosy teorii i praktiki planirovaniya i upravlenii" [Certain Problems of the Theory and Practice of Planning and Management] published in 1979) the awarding to Academician N.P. Fedorenko in January 1981 of the Prize imeni akademik V.S. Nemchinov recently established by the Presidium of the USSR Academy of Sciences.

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CSO: 1820/206

PLANNING AND PLAN IMPLEMENTATION

GOSPLAN OFFICIAL EXPLAINS PLANNING COST INDICATORS

Moscow PLANOVYE KHOZYAYSTVO in Russian No 6, Jun 81 pp 44-52

/Article by V. Kotov, deputy chief of a department of USSR Gosplan: "The Product Cost in the System of Planning Indicators"

/Text One of the tasks set by the 26th CPSU Congress, which requires particular attention in all the units of the economy, is the reduction of the product cost. This stems directly from the present conditions of production and the instructions of the party on the changeover of the national economy to the path of intensification and on the utmost increase of its efficiency. In implementing the decisions of the 26th CPSU Congress, during the new five-year plan a broad program of the economic and social development of the country has to be implemented, in connection with which the demand for resources is also increasing accordingly. At the same time a number of factors, which require additional capital and current expenditures, particularly the expansion of production in the northern and eastern regions of the country, the extraction of mineral raw material resources under more complex natural conditions, as well as increasing transportation costs for the delivery of raw materials and fuel from remote regions, the updating of the structure and the increase of the quality of products, especially in machine building, will be in effect in the 1980's. The economic impact of these measures will be obtained to a considerable extent beyond the 11th Five-Year Plan. It is possible to overcome these difficulties and find resources for the fulfillment of the new five-year plan only on the basis of the development of physical production and the increase of its efficiency. The Soviet economy has great potentials for this.

The increase of efficiency, if we translate this formula into the language of practical matters, L. I. Brezhnev noted in the Accountability Report to the 26th party congress, consists first of all in the fact that the results of production should increase more rapidly than the expenditures on it, that, while committing fewer resources to production, it would be possible to obtain more.

In the end the achievement of great results with a smaller amount of all production expenditures--capital and current--is important for the national economy. In economic estimates it is necessary to take into account the total expenditures of the reproduction cycle. In economic practice the minimization of capital and current expenditures is usually carried out not simultaneously, by different means and to a considerable extent in different links of the production apparatus. Therefore in planning and management it is necessary to proceed from the specific tasks facing each economic organ, by establishing in the plans assignments which correspond

to the nature of the activity, the level of competence and the responsibility of the collectives for the results of the work. Whereas the effectiveness of the use of capital investments is manifested first of all in the decrease of the specific expenditures per unit of production capacity, the effectiveness of the functioning of the enterprise is manifested in the increase of the output of products and the decrease of their cost.

A characteristic trait of the new five-year plan is the more complete utilization of the previously created production potential. During the 10th Five-Year Plan, as in the 1970's as a whole, the growth rates of capital investments and the gross national product were approximately equal, while during the 11th Five-Year Plan the latter will be nearly twofold greater than the former. The bulk of the increase of the output will be obtained at operating enterprises and, consequently, the significance of the decrease of the production cost in the increase of production efficiency is increasing. This becomes clear if it is taken into account that the current costs in the sectors of physical production during these years will be sevenfold greater than the amount of capital investments.

During the coming period the growth of production will depend on the more complete and efficient utilization of material and raw material resources and the increase of labor productivity. The decrease of the expenditures of raw materials, fuel and power per unit of output is acquiring especially great importance. This is connected first of all with the high materials-output ratio. The material expenditures amount to 60 percent of the value of the gross national product and 75 percent of the value of the industrial output, while their decrease by 1 percent provides a saving of 6 billion rubles a year. However, the importance of saving material resources is not confined to this. Given the limitation of a number of important types of natural raw materials, materials and fuel, the saving of resources is becoming a more and more important source of the growth of production. Thus, about 20 percent, or one-half, of the total increase of the output of machine building during the 11th Five-Year Plan will be obtained due to the use of saved resources. The economy of material resources also saves living labor in the raw material sectors of industry and decreases the demand for capital expenditures for their development. The increase of the materials-output ratio is making it possible to improve the proportions of reproduction and to influence comprehensively the increase of production efficiency.

An important factor of the increase of production efficiency is the growth of labor productivity, the increase of the output of products at operating enterprises with a stable or even a smaller number of workers. It should be remembered, however, that production efficiency is determined by the productivity of all national labor in the sphere of physical production, and not only of the labor of the collective of the enterprise. It is impossible to increase the productivity of national labor, by decreasing the number of those employed at the enterprises and at the same time by using wastefully the raw materials and materials, in which labor is also contained. The increase of labor productivity, which is achieved by the extension of cooperation, the interplant specialization of production and the replacement of the labor of the collective of the enterprise by the services of other enterprises, is also not equivalent to an increase of efficiency. Such measures are profitable to society only on the condition of the reduction of the total expenditures per unit of output.

These expenditures are reflected in the product cost, which is the monetary valuation of the entirety of the consumed resources in the form of the expenditures of labor, means of production and services of other links of the economy, which are comparable to the product being produced. Therefore, the decrease of the production cost appears as a concrete expression of the policy adopted by the 26th party congress of the economy and efficient use of all available resources. This dictates the need for the more complete utilization of the indicators of the production cost in the planned management of the economy. Meanwhile, in the practice of economic management its role is being underestimated. The production cost has been established in the plan by only a few enterprises and serves as a fund-forming indicator. The observance of the planned production cost, as a rule, is not taken into account when evaluating the work and tallying the results of socialist competition.

Such a situation was the result of the shortcomings, which existed in the past, in the use of the production cost and other value categories in the practice of economic management. The mechanical, uncontrolled "conversion" of the planned level of expenditures on the actual output and product assortment in many cases had the result that the appearance of a decrease of the production cost as against the plan was created, while the profit was less than the planned profit. The lack during this period of criteria of the product quality of a number of sectors and, consequently, of a differentiation of prices subject to the consumer properties of items gave rise to the notion of the contradictoriness of the tasks of decreasing the production cost and increasing the product quality. Meanwhile, both tasks have the same aim--they are a means of increasing efficiency and cannot be opposed.

The shift of the center of gravity in the system of indicators from the production cost to the profit to a certain extent is connected with the widespread opinion that the named indicators are of the same order and are complementary (the former is of an intermediate nature, while the latter determines the end result); therefore, there is no need for their joint use in the economic mechanism. Meanwhile, the extension of the concept concerning the correlation of the intermediate and end results to the indicators of the production cost and the profit is illegitimate, since they characterize different aspects of the production process. The production cost reflects the resources being consumed--the reimbursement fund and the expenditures of necessary labor; the profit--the value of the surplus product. The factors forming the indicators and, at the same time, the possibilities of their use in the system of planned management are also different.

The saving from the reduction of the production cost is achieved by the reduction of the consumption of resources per unit of output, that is, it is connected to a greater extent with the factors of intensive growth. In contrast to this, the profit is included in the price of the product as a standard amount and in this portion (which on the average amounts to 80 percent of its total) increases as a result of an increase of the volume of output, which is achieved first of all by the use of additional resources: the expansion of production capacities, the involvement of new raw material resources and manpower. Here the profit can increase more rapidly than the output, if the production of items with a higher than average profitability increases at a leading rate, which results most often from objective differences in the level of expenditures at different enterprises in the case of average sectorial prices and far from always coincides with the priority of highly profitable products in the meeting of the demands of the national economy and the population. The evaluation of the fulfillment of the plan with respect to the total amount of

the profit, without regard for the fulfillment of orders and contracts for the delivery of products according to the list, is also conducive to this. The increase of the profit is thus connected mainly with factors of extensive growth.

The profit is usually regarded as a result of the activity of an enterprise. Meanwhile, from what has been said it is easy to conclude that a part of the profit--the difference between the planned individual and average sectorial product cost, which is the basis of the price--is the income, which is redistributed through the prices and the amount of which does not depend on the enterprise. At many of the latter, especially in the raw material sectors of industry and in agriculture, this portion of the profit is very significant and has a decisive influence on the dynamics of the indicator. In light industry a substantial portion of the output is sold at retail prices, which are determined under the influence of a number of non-production factors. Specific conditions of the valuation of the output exist in a number of other sectors of industry. The amount of the profit received by an enterprise thus depends not only on the results of its activity and therefore cannot directly characterize them correctly from the standpoint of the production efficiency and work quality of the collective of the enterprise. Only a portion of the profit can be regarded as an additional impact which reflects the result of labor at the enterprise.

The decrease of the production cost depends not only on the activity of enterprises, but also on many national economic factors. However, the influence of the redistributive factors on this indicator is small, it reflects quite accurately the economy of all resources in the production process and as such is irreplaceable.

The amount of the total profit is an indicator of the amount of the net income of society, which was obtained in the sphere of production. The achievement of the goals of economic and social development involves an increase of the income; therefore, the state through the system of cost accounting relations and stimuli is creating an interest of enterprises in the increase of the profit and the efficient use of financial resources. However, the amount of the profit in itself, without a comparison with the used resources, does not characterize the production efficiency. The indicator of the profitability as the ratio of the profit to the value of the productive capital is also unsuitable for this purpose, since due to the lack of a sufficiently close relationship between them it is impossible to interpret unambiguously the dynamics of the profitability over a year-long period, regarding its increase as a positive phenomenon and its decrease as a negative phenomenon. The practical experience of using this indicator as an evaluation indicator has revealed its unsuitability for this purpose, and particularly its variance with the task of increasing the technical level of production. The use of the profitability in the system of the stimulation of enterprises was halted. Other relative indicators of the profit, for example, its growth rate, also cannot be used as evaluation indicators. Depending on the underlying, base level the amount of the profit can increase considerably in the case of a low rate and, on the contrary, a high growth rate of the profit can occur with its negligible absolute increase.

In the system of indicators of efficiency the emphasis has been placed on the indicators of the output-capital ratio, the materials-output ratio and labor productivity, which are oriented toward the implementation of specific measures on the saving of individual types of resources.

The amount of fixed capital of enterprises is relatively stable. The process of its replacement, which depends little on the enterprises, takes place slowly. The amount of output being produced is determined not only and not so much by the degree of utilization of the capital as by other factors: the resources of raw materials and materials, manpower and so on, which are taken into account in the planning of the production program. The indicator of the output-capital ratio is not a tool of the direct regulation of the investments in capital and the degree of its utilization. It is not included among the plan assignments that are approved and is not connected with the system of stimuli, just as it is not connected with the expenditures on the operation of the fixed capital, the change of which appreciably influences the dynamics of the efficiency.

The indicator of the materials-output ratio is very important. However, the total materials-output ratio of items is not calculated owing to the great labor-intensity and the conditionality of the results of the calculations. The indicators of the direct material expenditures, which exist in the costings and the reporting, are weakly linked with the rates of consumption of resources. Here the rates are determined only in physical indicators, which is not equivalent to the saving in value terms, since the quantitative decrease of the consumption of some types of materials is achieved in part by the increase of the use of others, as well as by the use of materials of a higher quality. The indicator of the materials-output ratio is not established in the plan, and its practical significance is limited.

The indicator of labor productivity, which is one of the main indicators in the prevailing system of the evaluation and stimulation of the work of associations and enterprises, performs a more active role. Now it is being supplemented by the standard of wages per ruble of output, by which the problem of ensuring the planned ratio between the labor inputs and the expenditures on wages in principle is being solved. It is necessary, however, to bear in mind that the latter in industry on the average are only 14 percent of the production costs. For all the importance of the saving of living labor, this alone is still not enough to increase the overall efficiency.

The influence on the increase of efficiency through the system of special indicators (the capital-output ratio, the materials-output ratio, labor productivity) is inadequate, since different types of resources within certain limits are interchangeable. Such a replacement occurs in the supplanting of manual labor by machine labor, the change of interplant specialization and cooperation, the centralization of the performance of select functions and so on. Moreover, the named indicators do not reflect the total amount of consumption of resources, since under the conditions of the intensifying specialization of the production apparatus and the differentiation of the functions of individual links various forms of specialized service (transportation, communications, repair work and so forth) are becoming more and more widespread, as a result of which the overall cash expenditures are increasing.

The total of the resources being used in the production process is reflected in the cost of the output being produced, in which resources, which are different in their nature and function role, by means of a monetary form are reduced to a uniform quantitative expression.

The real saving from the introduction of new equipment and technology, the improvement of the organization of production, the improvement of management and the increase of work quality at all levels also affect the production cost.

The product cost can be expressed in two forms: as an indicator, in which the total amount of the consumed resources is compared with the result of production—the volume of output, and with allowance made for its consumer properties (that is, directly) or with the price, which is set in conformity with the product quality (that is, indirectly). Moreover, this comparison is made continuously and everywhere, is based on objective data of accounting and is controlled by the ruble through the system of cost accounting relations.

The production cost is a tool of the measurement of efficiency and its control, which was created by the lengthy experience of production activity. Its inadequate use is one of the causes of the decline of the growth rate of the profit during the past five-year plan. The instructions given by Chairman of the USSR Council of Ministers N. A. Tikhonov in a report at the 26th CPSU Congress concerning the fact that the importance of the indicator of the decrease of the production cost in the increase of the profitability of production and in the evaluation of economic activity must be restored, are very timely in this connection.

Planning is the beginning of all beginnings in management. In the five-year plan for 1981-1985, which is presently being drafted, it is necessary, in our opinion, to establish assignments on the reduction of the production cost by ministries, departments and union republics with a breakdown by years of the five-year plan. The achievement of great production results with fewer resources presumes the utmost reduction of expenditures, and that is why the assignments should set the upper, maximum permissible level of expenditures per ruble of output. The ministries and departments within this level can set the maximum cost of a unit of output for associations and enterprises and can establish with allowance made for the specific nature of their production activity assignments on the reduction of the cost of all comparable output or assignments on the reduction of the expenditures per ruble of output. The inclusion of these assignments in the plan is not a mechanical return to former practice and is not a rejection of the new forms of management, but is their development with allowance made for present conditions. In recent times substantial changes have occurred in the system of planning and in the entire economic mechanism. The production cost now reflects more completely the expenditures, particularly those connected with the use of natural resources. At the same time penalties, fines and other payments, which are a redistribution of financial resources, are excluded from the expenditures which form the production cost. Thereby the production cost has begun to correspond more accurately to the value of the resources consumed in production. The use of this indicator is in full accord with the requirement of the economy of all resources. The prices of the output have come closer to the socially necessary expenditures of labor on its production and have begun to reflect more completely the product quality and to recover the expenditures connected with its improvement. Thereby a mechanism has been found, which makes it possible to combine the concern about the increase of quality with the requirement of the reduction of expenditures. The changeover to new wholesale prices, which takes place in 1982, will improve the conditions for the cost accounting activity of the enterprises of all sectors of industry.

Under former conditions (before the 1965 reform) the saving obtained from the decrease of the output being produced was often dispersed owing to nonproductive losses of various types, which checked the growth of the profit. This was one of the causes of the shift of the center of gravity in the economic mechanism from the production cost to the profit, after which, however, questions of the reduction of the production cost ended up in the background.

Conditions, which make it possible, by concentrating attention on the decrease of the production cost, to ensure at the same time an interest in increasing the profit, have now arisen. The system of the standard distribution of the profit among ministries and the state budget, which in conformity with the decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979 should be extended as experience is gained to all associations and enterprises, is creating such opportunities. The essence of the system, as is known, consists in the fact that in case of the nonfulfillment of the plan of the profit the payments to the budget are made in the full amount through the corresponding reduction of the profit which is left at the disposal of the ministry. The economic liability of ministries, associations and enterprises for the results of financial and economic activity is thereby increased.

Much was also done during this period in the area of the improvement of planning: the comprehensive approach to the plans of sectors was intensified, a system of planning standards is being developed, the methods of evaluating the effectiveness of the adoption of new technology in production were determined, a number of other measures were implemented. The main statutes on planning, accounting and the calculation of the production cost, which should generalize the gained experience, are being revised with allowance made for the changes in the organization of production and in the economic mechanism. At the same time in light of the increased demands and problems of the development of the economy at the present stage the planning of the production cost, particularly on the basis of the introduction of automated systems of planning estimates, the standard method of accounting and the function and value analysis of the expenditures on production, has to be further improved.

In the plans it is necessary to take more fully into account the real possibilities of improving the use of resources, which are being created by the retooling of production, the improvement of its organization, the use of resource-saving technology and the reduction of all kinds of losses and excessive expenditures.

The establishment in the plan of assignments on the production cost is only the first step in the direction of the purposeful influencing of the efficient use of all resources. The entire system of planned management with its diverse forms and methods should be aimed at this. The assignments should be reported through the system of intraplant technical, economic and production operations planning to the local structural units of the enterprises, and through norms and standards to the workplaces and immediate performers. This will create the basis for effective monitoring of the expenditures, the development of socialist competition for the efficient use of resources, the evaluation of the work quality of each worker and the stimulation of the increase of the results of his labor. The coordination of the limits, norms and standards, which are reported to the structural subdivisions and workplaces, with the assignments on the reduction of expenditures for the enterprises as a whole, as well as the existence of specific organizational and technical measures, which ensure the fulfillment of the plan assignments, should be an indispensable condition here. At present the calculations of the production cost often lie around in the offices of planners and do not become an organizing principle in the activity of the enterprise collective of the enterprise. The norms of the expenditures are not revised in good time and in a number of cases are not coordinated with the plan calculations, the estimates of the expenditures on production and the calculations of the cost of the output being produced. Thereby the nonfulfillment of the plan at times is predetermined from the start; at the end of

the plan period requests for the adjustment of the ostensibly inadequately substantiated assignments are sent, "objective" causes responsible for their nonfulfillment are sought. The lack of conformity of the norms and limits, which are used in intraplan planning, to the plan assignments should be regarded as a violation of planning discipline, which is incompatible with the requirements of the increase of the level of production management.

During the years of the 10th Five-Year Plan the effectiveness of the economic mechanism was reduced by frequent adjustments of the plan, including on the profit, behind which there often were not only objective conditions, but also a low level of management. The decisions of the 26th CPSU Congress on the tightening up of planning discipline and the increase of the responsibility for the fulfillment of the state plans will undoubtedly promote the halt of unjustified adjustments and thereby the strengthening of the entire economic mechanism, its more effective functioning. The proper evaluation of the fulfillment of the plan on the production cost is of great importance, since a decrease of the expenditures can be achieved by means which do harm to public interests (in case of the incomplete fulfillment of the requirements on the use of natural resources, the protection of the natural environment and so forth) and to the detriment of the assurance of steady work at the enterprises themselves (the nonimplementation of measures on preproduction, the repair of equipment and others). It cannot be recognized as normal when in every case of the delay of deliveries of raw materials, the change of assignments on deliveries of products and so forth the question of changing the plan is raised. The fulfillment of the plan must be evaluated with allowance made for the fulfillment of the contracts of delivery not only in accordance with the products list, but also in accordance with the indicators of the profit, having increased the penalties for the failure to meet contractual obligations. Substantial changes of conditions, which are dictated by the national economic situation, should be taken into account when evaluating the fulfillment of the plans. It is necessary to change over from the formal evaluation of the fulfillment of the plan on the production cost by a simple comparison of the plan and reporting indicators, which occurred in the past, to an analytic evaluation, to identify the causes of deviations from the plan, to offset by means of reserves the losses of enterprises, which are caused by external factors which do not depend on them, and to require the recovery of the losses which result from shortcomings in the work of the enterprises themselves. No matter how procedurally complicated this problem may seem, it is necessary to solve it. The first steps have already been taken, the means of evaluating the fulfillment of the plan should be further improved.

It is necessary to utilize more extensively the system of economic stimulation for reducing the product cost. When using the volume, the product quality and the increase of labor productivity as fund-forming indicators the amounts of the material incentive funds, which are formed as a percentage of the profit, depend little on the observance of the planned level of expenditures. In the food industry and a number of other sectors the standards of the formation of the material incentive funds are established as a percentage of the wage fund and are not at all linked with the level of expenditures. The decisions of the 26th CPSU Congress require that all assets be allocated for the economy and efficient use of resources. It is also necessary to subordinate to this task the system of economic stimulation, having made the formation of incentive funds dependent on the saving of resources, that is, the reduction of the product cost. The adoption of new decisions is not necessary for this, since the decree of the CPSU Central Committee and the USSR

Council of Ministers of 12 July 1979 provides for the possibility of using the production cost as one of the fund-forming indicators. The appropriate procedural documents, which specify the means of using this indicator in the system of stimulation, also exist. It is necessary merely to realize all the importance of this economic and political problem and to orient the system of the payment of bonuses to the workers of enterprises toward saving, having linked it more closely with the saving of resources at each workplace.

While emphasizing the role of the production cost in the increase of production efficiency, one must not underestimate the importance of the profit, which was and remains one of the indicators of the comprehensive plan of the sectors of physical production. It is a question not of the replacement of one indicator by another, but of their joint use. Each of them performs the role characteristic of it in the management of production. The production cost and the profit are not interchangeable indicators, but measurers of different aspects of diverse production activity, without the use of which it is impossible to manage this activity effectively. By excluding each one from the system of planned management, we impoverish this system and relax the attention toward the most important aspects of the economy. It is well known what kind of attention is devoted to the production cost in capitalist production, the goal of which is a profit. For us the profit is no less important as a source of the socio-economic development of society, and precisely for that reason we cannot relax the attention toward the production cost in any of the links of production—from the enterprise to the national economy as a whole. This stems directly from the Fundamental Law—the USSR Constitution, which postulates the active use of the profit and the production cost in the management of the economy.

The development of the economy in conformity with the goals and tasks, which were specified by the 26th party congress, requires the more complete and efficient use of the production potential, the developed scientific and technical stockpile, the improvement of the organization of production and economic relations, the reduction of losses and the eradication of mismanagement and wastefulness. Planning, the methods of management and the entire system of planned management should be subordinate to the solution of these problems. The five-year plans of ministries, associations and enterprises, which include assignments on the reduction of the production cost and the increase of the profit, will become the organizing basis of the efforts of collectives, which is aimed at the solution of the problem of the intensification of the economy and the achievement of high production results with fewer expenditures of resources.

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PLANNING AND PLAN IMPLEMENTATION

REVIEW OF KIPERMAN'S BOOK ON INDUSTRIAL STATISTICS

Moscow VESTNIK STATISTIKI in Russian No 6, Jun 81 pp 63-66

[Review by V. Adamov, Moscow, of book "Statisticheskiye pokazateli promyshlennoy produktsii i ikh sovershenstvovanie" [Statistical Indicators of Industrial Output and Their Improvement] by G. Ya. Kiperman, Statistika, Moscow, 1980, 296 pages]

[Text] The dynamism of the Soviet economy and the changes generated in the economy by scientific and technical progress and other factors require continuous improvement in the system of indicators that characterizes various aspects of development of social production and that is used in planning, accounting and statistics. In this system, a central place belongs to industrial output indicators. The book under review is devoted to the examination of these indicators, the problems that arise when they are used, and the directions of their improvement in the light of the 12 July 1979 decree of the CPSU Central Committee and the USSR Council of Ministers "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing Production Effectiveness and Improving Work Quality."

The book consists of an introduction and six chapters. The introduction clearly defines the principles advanced by the author in his solution of the problem of formulating a system of indicators. G. Ya. Kiperman notes that the unity of social reproduction and the dialectical interrelationship of its elements must be reflected in the unity and interconnection of the economic categories and the appropriate indicators that characterize this process. However, the author of the work believes that social reproduction is a process that involves not only unity but also a certain amount of contradiction. Therefore, even a system of indicators which possesses internal unity cannot be entirely free of contradictions that reflect the objective nonantagonistic contradictions that exist in reality. G. Ya. Kiperman goes on to say that the problem is to make full use of the advantages of the system of indicators while eliminating or minimizing the negative aspects of its inherent contradictions.

The author convincingly shows that all planning and statistical indicators are used in various directions in economic practice, the most important of which are accounting and stimulation. A characteristic feature of the author's approach to the discussion of all indicators of industrial output is his attempt to examine their content from the standpoint of the need for the true reflection of actual economic phenomena and processes and their stimulating impact on various aspects of the reproductive process.

Chapter One (The System of Indicators of Industrial Output) defines the concept of output of an industrial enterprise and its structure, classifies output indicators by type, and examines their relationship with the appropriate economic categories. The author correctly states that output indicators in physical, labor and value terms characterize the results of production activity from various aspects, are used for various purposes and therefore complement one another rather than compete with one another (p 22).

G. Ya. Kiperman notes positive aspects of the measurement of output volume in normative wages (in norm-rubles)--a practice which has gained in popularity in recent years--and correctly believes that under present conditions, it is not feasible to expand the sphere of its application to include individual enterprises (production associations). While this method is useful in a number of instances, it is unquestionably limited to the intraplant framework.

The author correctly observes that certain results of the economic production activity of industrial enterprises and associations are classified as the output of construction, agriculture and other branches of the production sphere, but for some reason fails to mention that a certain part of industrial output is produced by other branches of the national economy. However it is essential that this circumstance be taken into account in the selection of indicators of the volume of industrial output in a given period of time for the nation as a whole or for individual regions.

Chapter Two (Output Indicators in Physical Terms) examines the essence, significance, sequence and particulars of planning and accounting of output in physical and conditionally physical terms, the basic directions of improvement of physical measurers of output and their practical use.

Contrary to the widely held view that the selection and use of physical measurers of industrial output present no difficulty, the author convincingly shows that they are complex and that the conclusions that are drawn on the basis of physical measurers of output are in some cases ambiguous and even contradictory. G. Ya. Kiperman uses concrete examples to illustrate the way in which the task of orienting the activity of production links toward the attainment of high end results is refracted in the solution of the problem of selecting and improving physical measurers of industrial output. In so doing, he proceeds from the premise that with respect to output expressed in physical terms, the end result is the optimal satisfaction of a specified requirement for the output coupled with minimum inputs of social labor. In the author's opinion, it is specifically this criterion that makes it possible to make an objective evaluation of each physical measurer and the degree of its correspondence to the demands.

The book devotes much attention to expanding the practice of applying parametric (and in a number of branches, conditional) physical measurers of output. However, G. Ya. Kiperman emphasizes, there will always be a contradiction between the multitude of properties of products and the possibility of physical measurers to reflect only one or two of them. This is the reason why the author, while believing that a central role should belong to physical measurers, does not juxtapose them against value-type measurers, but to the contrary, deems their rational combination an obligatory condition to the effective application of physical and value indicators of output in planning and statistics and especially in the solution of the problem of stimulating the activity of production collectives.

Even though the author justly criticizes the practice of planning and counting individual types of output in units of measure that do not entirely reflect the consumer properties of the products, he does not believe that it is possible to get along without them entirely under present conditions. However, this does not mean that there is no sensible solution to the problem: if all commitments regarding delivery contracts and orders are met, the plan must also be regarded as fulfilled in physical terms (for example, in tons).

Chapter Three (Value Indicators of Industrial Output) discusses prerequisites for determining output indicators in monetary terms, characterizes value indicators employed in planning and statistics, and examines their relationship with physical indicators. The latter are of particular interest. Thus when the author speaks of upgrading the role of physical indicators under present conditions, he emphasizes that this should not be at the expense of value indicators. Physical and value indicators form a single system that characterizes the social production process from two interconnected aspects: the quantity of use values and the socially necessary labor embodied in them. "Therefore the upgrading of the role of physical indicators means a higher degree of effectiveness and substantiation of the system of indicators in general" (p 111). It is impossible to agree with this statement.

In the opinion of G. Ya. Kiperman, the contradictions between physical and value measurers can only be eliminated through their rational combination. Everything hinges on the practical realization of this demand. This is why the author considers the application of the indicator of products sold to be especially important.

While the incorporation of this indicator in the planning and evaluation of the activity of enterprises and associations proved to be useful, it did not produce all the expected results. In the author's view, "the fact of the matter is that all the advantages of using the sales indicator, including the more complete subordination of production to the interests of consumers, are connected not with the general volume of sales but with the sale of each specific product. After all, the consumer makes demands on the quality and time of delivery of a concrete product, but not on the overall sales volume" (p 115).

Therefore, G. Ya. Kiperman believes that it is necessary to combine the ex ante indicator of the volume of salable output with the ex post indicator of the volume of sales with due regard to the observance of delivery contract terms. Even though the fulfillment of the plan in such a case is assessed in value terms, there essentially develops a unique form of monitoring the fulfillment of the shipment plan in physical terms with due regard to time and other conditions stipulated in the delivery contract (order). We also agree with the author that the incorporation of the new indicator in practice does not in itself produce the expected results unless the system of necessary measures is articulated. The appropriate recommendations are cited in the book.

Chapter Four (Net Output in the System of Economic Indicators) and Chapter Five (The Experience of Applying the Net Output Indicator), which are interconnected in their content, occupy a central place in the work. The author presents a detailed description of the essence and features of the net output indicator and at the same time devotes his primary attention to the normative method of

measuring net output. Here we must above all note the persuasiveness of the author's basic theoretical concept. If the wholesale price is regarded as the norm governing socially necessary labor inputs, then it is natural to consider that it breaks down into norms governing transferred value and value that is newly created by the live labor of workers at a given enterprise.

Taking into account the important role that is assigned to the (normative) net output indicator in the decree of the CPSU Central Committee and the USSR Council of Ministers on the improvement of the economic mechanism (dated 12 July 1979), the detailed examination of the entire complex of associated questions is of considerable scientific interest and raises the timeliness and practical significance of the book in general.

The book shows that the methods currently used to determine the volume of net output on the basis of comparable (stable) norms have evolved on the basis of the generalization of a vast body of practical experience. The development and approbation of these methods have been promoted not only by the large-scale economic experiment carried out in 1973-1976 but also by the utilization of the experience of applying the indicator of the standard cost of manufacture, by the comprehensive analysis of repeated attempts to use an estimated net output indicator, i. e., an indicator arrived at by subtracting material production costs and the cost of other economic experiments and theoretical research from the value of the gross product.

The issues presented in chapters four and five are discussed in concrete terms and the theoretical conclusions are illustrated by many well-chosen examples.

The author quite convincingly demonstrates the advantages of using normative net output to make an objective evaluation of the performance of enterprises and associations and to measure the effectiveness of live labor, the planning of the wage fund and the monitoring of its use. At the same time, the author does not skirt difficult and debatable issues, does not idealize or absolutize the normative net output indicator, and clearly defines the specifics and limits of its application under actual production conditions.

The book examines in considerable detail the aging of net output norms, the significance of which is frequently exaggerated by those who are opposed to the practical use of the normative net output indicator. The author's analysis leads him to conclude that the aging of norms is a process that does not qualitatively or quantitatively differ from the aging of wholesale prices that are the bases on which the norms are determined.

G. Ya. Kiperian makes a very detailed examination of the possibility of applying net output norms in planning, accounting and statistics. Unfortunately, the book does not specify clearly the areas of planning and statistics in which the net output indicator cannot replace the gross and commodity output indicators. In our view, these areas are primarily the measurement of material-output and output-capital ratios even though the author is evidently of a different point of view (see pp 220-223).

In our opinion, the net and normative net output indicators can replace the gross and commodity output indicators only in the characterization of the effectiveness of utilization of live labor and in the determination of the actual contribution of collectives of workers of individual enterprises and associations to the creation of value and use value. It is probably impossible to get by without gross and commodity output indicators when means and objects of labor and the most important branch and interbranch proportions are involved.

Serious attention is merited by G. Ya. Kiperman's examination of the methods, course and results of the experimental application of the normative net output indicator. The author's reply to opponents of this indicator and his criticism of various, frequently contradictory points of view regarding the properties, particulars and area of application of the normative net output indicator are quite convincing and detailed. We would only note that the criticism of the normative net output indicator also includes points that are worthy of attention. And it is not by chance that the author demands the in-depth, comprehensive analysis of the experience of using the new indicator in order to prevent possible negative consequences of its widespread use.

The necessity of examining the questions covered in Chapter Six (Indicators of Product Quality) stems from the fact that the characterization of the system of output indicators would be incomplete if it failed to include quality indicators.

G. Ya. Kiperman offers his own quite logically substantiated classification of product quality indicators including individual, group, general, particular, and complex indicators. Interest is presented by the grouping of quality indicators (p 280) which includes indicators of a product's usefulness and area of application, indicators of reliability and service life, manufacturability indicators, ergonomic indicators, esthetic indicators, indicators of standardization and unification, patent indicators, and economic indicators. This grouping essentially defines the structure of the subsystem of product quality indicators and the composition of each of its divisions. The author's proposals in this area struck us as very interesting.

Also of interest is G. Ya. Kiperman's proposal to apply the normative method of establishing plan targets on the basis of the percentage of products in the highest quality category so that all industrial enterprises and associations would be placed in equal conditions in this regard. However it is not so simple to implement his proposal since it is necessary to consider the diversity of production conditions and of the product mix at enterprises within the same branch. Nor does the author indicate the kind of basis that can be used for developing the system of norms required for the implementation of his proposal. It should also be noted that in our view indicators of the share of output in the highest quality category in total output of different enterprises in the volume of products certified or scheduled for certification in quality categories would be more comparable than the share in overall output volume as recommended by the author.

The book also contains a number of flaws. Thus, physical, parametric and conditionally physical measurers of output are not clearly differentiated in Chapter Two. The author is occasionally too categorical in his criticism of scientists and lay persons with whom he disagrees. Comparison of data on the structure of net output norms with individual and average profit for concrete types of products

(p 172) shows that for each type of product shown in Table 4.8, the share of profit in the overall magnitude of the norm with average profit ranges from 42.6 to 47.9 percent. Also lacking in uniformity is the ratio of profit to overall wage costs in the norms. Here the range of fluctuation is from 74.4 to 91.9 percent. Thus we cannot agree that "...in norms with average profit, its share is practically uniform...." (p 172). The author should have offered more detailed explanations in this regard. There are some discrepancies between the data cited in Table 5.17 (p 273) and the text of the book (p 274). According to the table, the minimum specific labor-output ratio is 0.07 norm-hour per ruble of wholesale price of the TK-34-N turbo-compressor, while the text states that the specific labor-output ratio fluctuates between 0.06 and 0.16 norm-hours per ruble of wholesale price. Figure 3.1 (p 80) is unfortunate. Even though its entire content is correct, the form used to picture the structure of the indicators results in "empty spaces" the sense of which are unclear to the reader. The book also contains semantic repetitions. So it is that the first two chapters present similar descriptions of physical indicators. It is difficult to understand why the author, after proposing the classification of physical output indicators (pp 18-19), does not even raise the question of the need to create a classification of value indicators of output.

The above mentioned debatable points and flaws do not call into question the general assessment of the given book which unquestionably must be high. The book indisputably deserves the attention of a wide readership: scientists and laymen as well as students and graduate students in economic fields.

G. Ya. Kiperman set himself the task of subordinating all proposals on improving physical and value indicators of output to a single goal: to use these indicators to orient the activity of enterprises, associations and ministries toward the maximization of the end results. While this is a difficult task that will require a great deal of research, the author will unquestionably make a substantial contribution to its realization.

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CSO: 1820/217

INVESTMENT, PRICES, BUDGET AND FINANCE

CURRENT CREDIT LEVERS IN SOVIET ECONOMY DISCUSSED

Moscow EKONOMICHESKIYE NAUKI in Russian No 5, May 81 pp 94-99

[Article by doctor of economic sciences professor M. Pessel': "Credit Levers in Economic Operations"]

[Text] The "Main Directions in the Economic and Social Development of the USSR 1981-1985 and for the Period through 1990" adopted by the CPSU 26th Congress take account of the need to enhance the role of finance-and-credit levers in the intensification of production, strengthening cost accounting and reinforcing the regime of economy.¹ During the 11th Five-Year Plan the expansion of credit relations and the enhancement of the role of credit in stimulating production efficiency should promote the well-planned utilization of credit sources, an acceleration in the turn-over of working capital, an increase in the yield from investments, improved labor productivity, a fall in production costs and growth in money savings. In other words, the use of credit should lead a better resolution of the tasks of intensifying the economic development of socialist society and to a situation in which "the results of production grow more rapidly than production expenditures and attract relatively fewer resources into production while achieving the greatest possible return."²

The figures in the table below show the development of credit relations during the 9th and 10th five-year plans.

Credit Operations by Banks in the National Economy and Consumers (Loans Outstanding at End of Year)*

Credits	1965		1970		1975		1979		1979 as a	
	billions	%	billions	%	billions	%	billions	%	percentage	
	of rubles		of rubles		of rubles		of rubles		of;	
All bank credits	74.0	100	126.2	100	204.0	100	300.4	100	1985	1971
Including:									405.9	238.0
short-term	66.7	90.1	104.7	83.0	160.5	78.7	225.0	74.9	337.3	214.9
long-term	7.3	9.9	21.5	17.0	43.5	21.3	75.4	25.1	1033.0	350.7

* Source: The National Economy of the USSR 1979. Moscow 1980 page 557

It can be seen from the table that the increase in long-term loans was particularly great: during the past 15 years they have increased by a factor of more than 10. This is explained by the fact that in accordance with party and government decisions, credit relations have been used more extensively in the investment process and bank loans have become an important source of funding for the expanded reproduction of fixed capital.

At the same time, as a result of the growth in the volumes of production and output marketed, and also the increase in the proportion of credit in the formation of working capital, there has been a growth in short-term loans offered for up to one year. The main uses of short-term loans are now for expenditures on agricultural and industrial production, stocks of raw materials, materials, fuel and finished output, and goods in the wholesale and retail trades. Almost half the working capital of all enterprises (59.1 and 58.4 percent respectively in trade and agriculture) is now formed through bank loans. Since bank loans are used to create planned reserves of material values and for other expenditures envisaged in the plan, they represent a real material security and constitute a substantial factor in the stability of the country's entire monetary system. During the 10th Five-Year Plan the short-term loans making up the bulk of credit investments increased almost R65 billion, or 40 percent. The bulk of short-term loans is used by industry (32 percent), agriculture (22.9 percent) and trade (21.2 percent).

In decisions adopted by the party and government to improve the economic mechanism, the main directions are indicated for the further development of credit relations: improving credit planning, better use of credit levers to accelerate technical progress, enhancing the role of bank credit as a factor promoting the expansion of consumer goods, and providing timely calculations for output produced and services rendered.

We shall examine ways of activating the use of credit levers in the national economy.

Improving Credit Planning

One very important feature of credit relations under socialism is their planned nature. The planned nature of credit means that demand for loans, the periods for which loans are offered and repayment schedules, along with the resources to be used as loan sources, are planned, taking into account the national economic proportions, and all operations by credit organs are regulated by confirmed credit and cash plans. In this way, credit planning is linked directly with production and financial planning and in the final analysis with all the main indicators of the national economic plan.

The system of measures to improve planning and strengthen the influence of the economic mechanism in increasing production efficiency and work quality contained in the CPSU Central Committee and USSR Council of Ministers decree of 12 July 1979 envisages an improvement in the level of long-term planning and its better coordination with current plans, and reinforcement of the role of the five-year plan as the main form of planning for the economic and social development of the USSR. The five-year plan should include a summary financial balance with the distribution of income and expenditure by each year of the five-year plan, while the annual plan

should contain summary balances for each year. Within these balances, provision is made for the supply of financial resources for all measures established in the state plans, along with the formation of the necessary financial reserves. The USSR Ministry of Finance passes to the USSR Gosplan the calculations for the summary financial balance, proposals for balancing it, and summary calculations for income and expenditure in the USSR state budget for the five year plan; and the USSR Gosbank and USSR Stroybank pass on the calculations for long-term and short-term credits and reserves. These calculations are done for a five-year period split up by years.

In order to demarcate functions between banks conducting credit operations and the accounting operations for the features of long-term and short-term credits, in practical planning work credit plans are worked out for the USSR Gosbank for short-term and long-term credit operations together with credit plans for the USSR Stroybank for short-term and long-term credit operations (credit plans for the USSR Foreign Trade Bank are included in the USSR Gosbank credit plans).

The USSR Gosbank credit plan for short-term credit operations reflects a broad range of credit relations arising during the course of monetary circulation within the national economy, and also the balance of credit plans for the USSR Stroybank which does not itself conduct cash operations since the USSR Gosbank is the sole cash center for the country. The USSR Gosbank credit plan for long-term credit operations covers credit relations connected with the expanded reproduction of fixed capital at agricultural enterprises and the consumer cooperatives, and also with long-term credit for agriculture.

The USSR Stroybank credit plans for short-term and long-term credit operations regulate the credit relations that arise during the process of monetary circulation in enterprises and organizations of the construction industry, and also in connection with long-term credit operations for enterprises in all sectors of the national economy (except agriculture).

Further improvement in credit planning involves the task of compiling a summary credit plan that combines the plans of the USSR Gosbank and the USSR Stroybank and characterizes the status and utilization of monetary resources accumulated throughout the entire credit system.

It should be noted that until recently credit plans were compiled only for the current period: for short-term credit operations for each quarter and for long-term operations for the calendar year. The plan calculation for short-term loans over one year was not confirmed as a planning document but used only for analytical purposes. Calculations for the credit plan for the five-year plan were done in a similar way; and here difficulties arose in connection with the fact that the ministries and administrations did not give the necessary attention to financial and credit planning, while the central planning and financial organs did not work out summary financial balances of a directive nature for all elements of the national economy.

The more complete calculation of loan requirements by associations and enterprises is an extremely urgent problem in credit planning. In order to resolve this problem it is necessary to reflect demand for short-term bank loans in the income and expenditure balances of enterprises and associations.

Improvements in credit planning will promote the resolution of urgent problems such as attracting excess reserves of material values into circulation, accelerating working capital turnover rates, increasing yield on capital, increasing output, improving the quality and renewing the range of consumer goods, increasing the volumes of commodity turnover and consumer services and so forth. In other words, improving credit planning will serve the cause of improving productivity in social labor and enhancing the efficiency of socialist production.

Credit Levers in the Acceleration of Scientific and Technical Progress

The acceleration of scientific and technical progress is an important direction in the party's economic strategy. Here it should be borne in mind that "under the conditions in which the national economy will be developed during the eighties an even more insistent acceleration of scientific and technical progress will occur."³ An important role in the resolution of this problem will be played by the expenditure incurred in the use of such sources of finance as will be of maximum interest to all branches of the national economy with respect to the fastest possible implementation of the results of progress in science and technology.

In the materials of the CPSU 26th Congress and the CPSU Central Committee and USSR Council of Ministers decree of 12 July 1979, specific directions are determined for the influence of the finance-and-credit mechanism on raising the effectiveness of capital investments. One of the most important is the strengthening of cost-accounting relationships between all those participating in the investment process. During the 11th Five-Year Plan there will be a gradual transfer to cost accounting by the scientific research, design and planning and technologic organizations and the scientific-production associations. Work connected with the introduction of new technology will be done on the basis of agreements or order-schedules. Implementation of these measures will promote the accelerated development of new, improved kinds of output, the introduction of new technology and the fastest possible start-up and mass production of highly productive equipment.

An important place in the resolution of this task belongs to the Unified Fund for the Development of Science and Technology (UFDST) now being created in all ministries and administrations. Assets from this fund are being used to finance scientific research, test and design and technologic work and to reimburse expenditure connected with the development and production start-up of new kinds of output, and also the increased expenditures incurred during the first year of production of new articles. The use of credit to accelerate scientific and technical progress under these conditions is being extended. When there is a gap between the time periods for placing assets in the UFDST and the time that expenditure must be incurred, ministries and administrations are able to use bank loans that are repaid as funds become available within the calendar year. Production and scientific-production associations are also able to use bank credit to pay for work that is fulfilled in time periods shorter than those envisaged by the plan.

Associations and enterprises are able to obtain bank loans to carry out highly effective measures provided for in the plan to develop science and technology. These loans are offered for up to two years with subsequent repayment from UFDST assets.

Under present conditions, particularly great significance attaches to the development of credit relations in construction that promote the improvement of the reproductive structure of capital investments, labor productivity growth in construction and reductions in construction times, reducing production costs and improving the quality of construction output. Practical work in the development of long-term credit operations for capital investments has shown the definite advantages of the credit method for making funds available compared with financing on a nonreturnable basis. The greater the volume of credit operations for capital investments, the more substantiated the time periods, sizes and repayment sources for the loans, the more effectively benefits and sanctions are applied and the more active the influence of the interest rate for credit, then the more fully these advantages are seen.

In construction, credit relations are now being developed at inadequate rates. Thus, in the plan for financing of state capital investments in 1981, the share of bank credits in all sources of financing is 4.7 percent, while the allocation from the budget is 45 percent and amortization deductions 28.4 percent.

During the 11th Five-Year Plan there will be substantial expansion in credit relations between contract construction organizations and the banks. This is in connection with the abolition of advances made available to clients and their replacement with advances by direct bank credit operations. At the start of the 11th Five-Year Plan, in the formation of working capital for contract construction organizations, 16.5 percent was available from the organizations' own resources and slightly over 19 percent from bank credit; while debts (mainly advances to clients) made up more than 60 percent. With the abolition of advances to clients, about half of all working capital will come from bank credits--almost the same as in other sectors of the national economy. Accordingly, debts should be reduced to about 8 or 9 percent.

The extended use of credit relations will be combined with the development of cost-accounting interest by the contract organizations in reducing construction periods, improving work quality and introducing calculations for turnkey projects. Credit operations involving scientific research, planning and design and technologic organizations will be extended in connection with the transfer to the system of accounting for work completed and accepted by the client instead of payments in stages.

Enhancing the Role of Bank Credit in Expanding the Production of Consumer Goods.

The CPSU 26th Congress defined important tasks in the field of consumer goods production. While industrial output should increase 26-28 percent during the 11th Five-Year Plan, the output of consumer goods should increase 27-29 percent. Under conditions in which the national well-being is being sharply raised and the wages of kolkhoz farmers are being systematically raised, the role of economic levers influencing the development of consumer goods production is being substantially reinforced.

The "Main Directions in the Economic and Social Development of the USSR 1981-1985 and for the Period through 1990" set out important measures to further equalize consumer money incomes and expenditures. A balance of consumer money incomes and expenditures set out on an annual basis is included in the state five-year plan for the country's economic and social development 1981-1985.

Financing for a considerable part of the expenditures incurred to increase the production of consumer goods will be arranged through credits offered by the banks. Thus, by the start of 1980, enterprises of the light and food industries were being offered credit totaling more than R32.4 billion for material values and expenditures incurred in production.

The CPSU Central Committee and USSR Council of Ministers decree "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing Production Efficiency and Work Quality" permitted the USSR Gosbank and the USSR Srobybank to offer enterprises, associations and organization credit for making above-limit capital investments for highly efficient measures to produce new output and improve the quality of manufactured goods, and also for expanding the production of consumer goods and improving everyday consumer services under conditions in which expenditures are recouped and bank loans repaid within periods of up to two years through the additional profit. In 1979 alone, 13,669 new projects were commissioned through this kind of credit in addition to the expenditure envisaged in the plan. USSR Gosbank establishments arranged about R1 billion of credits whose use made it possible to produce additional output worth R2.4 billion and obtain an annual extra profit of more than R600 million.⁶

The USSR Gosbank can also offer credit to sovkhozes and other state agricultural enterprises for above-plan expenditures on state capital investments for the introduction of new equipment, mechanization, improvements in production technology and other measures aimed at technical improvement and production development, and also to expand the organization of consumer goods production and improve quality. As a result, for example, in 1979, of the total loans made for these purposes, the share of credits given to sovkhozes increased to 30.4 percent compared with 23.7 percent during 1975. Gosbank has been authorized to offer credit for periods of up to six years to enterprises in heavy industry to develop their subsidiary agricultural facilities and increase the output of meat, vegetables and fruit.

When determining periods for recouping expenditure, account is taken of the additional profit obtained by enterprises, and also of the proportion of taxes from turnover (up to 50 percent) from the sale of goods produced thanks to the credit measures.

When using loans to develop consumer goods production, enterprises should carefully calculate which output it is expedient to increase and what sort of demand can be expected. Taking these factors into account, the credit method of financing can promote the elimination of shortages in many kinds of consumer goods essential for consumers.

A New Procedure for Calculating Production.

Under the conditions of commodity-money turnover, cost-accounting relations between enterprises and organizations are handled by cashless monetary accounting. At the basis of this, in turn, lie credit relations. The essence of cashless monetary accounting is that cash in hand is replaced by contra accounts kept against bank accounts. At the same time, cashless accounting signifies the movement of credit resources from the bank, that is, the transfer of assets from one bank account to another.

As the national economy develops, cashless payment circulation is constantly increasing. Payments amounting to R6 billion are now made every day in the Gosbank establishments. In the future cashless accounting will be developed at preferential rates compared with cash circulation accounting since ready cash will be increasingly replaced by credit operations.

In terms of its economic nature, all cashless circulation effected through bank accounts is credit turnover. At the same time, direct bank credit operations play an important role in effecting payments between the manufacturer and his supplier. Under present conditions, direct credit is offered in the case of 70 percent of payments made through Gosbank establishments for commodity and material values and services.

Fulfilling the directives of the CPSU 25th Congress on improving the organization of accounting in the national economy, banking establishments have done much work in the direction of restructuring in accordance with the steps taken to improve the organizational structure of management, strengthen production cooperation and concentration, and enhance enterprise cost-accounting interest in and responsibility for the fulfillment of planned tasks. In particular, steps have been taken to improve document circulation and equipment in banking operations in order to create favorable conditions for timely accounting work. More than 84 percent of suppliers now pass accounts documents to the banks in order to recover money from purchasers two working days after goods have been unloaded. The time periods for action taken on letters of credit have been shortened, telegraph transfers to make payment have been expanded and so forth. As a result of the work done, 95 percent of accounts documents for commodity and material values and services are paid on time and the supplier debt resulting from late payments against documents amounts to no more than the equivalent of 1.5 working days' output.

At the same time, in a number of cases delay that still occurs in the payment of accounts causes serious financial difficulties in the activities of the supplier enterprises. Economists express various opinions on ways to insure timely payments. They suggest, for example, that output should be paid for as soon as it is unloaded, using bank credit. However, it is scarcely expedient to convert banks into some kind of "buyers-up" of output and remove cost-accounting responsibility for the fulfillment of long-term obligations from suppliers. It has also been suggested that in any event purchasers' obligations to pay could be insured through bank credit. This recommendation is also doubtful, since only in rare instances do purchasers not have assets to make payments on time as the result of serious and long-standing shortcomings in their cost-accounting activities. Removal of the responsibility of such purchasers for meeting their obligations to their suppliers would signify a weakening of the action of the cost-accounting mechanism.

The CPSU Central Committee and USSR Council of Ministers decree of 12 July 1979 provides for a favored procedure for offering credits to purchasers to pay for output delivered in accordance with agreements concluded. If payment time arrives and the purchaser is experiencing a temporary shortage of funds, payment acceptance documents are settled by the banks by loans, with the purchaser repaying them. This procedure went into effect on 1 January 1980. The loans are made for a period of up to 60 days and are paid in the sequence determined for the payments for commodity and material values. The interest rate for this credit is set at 5

percent annually; if, however, the loan has not been repaid by the end of the 60-day period, the interest rate is raised to 10 percent. First results from the use of this kind of payment credit have shown that many borrowers are not making the 60-day deadline and continuing to use the credit for longer periods.

Payment credit should not be offered automatically. If the purchaser is experiencing a systematic, chronic shortage of funds, the bank should refuse to make payment against payment documents through credit. This procedure for credit operations has as its goal enhancing the responsibility not only of borrowers but also of banks for the status of payment discipline. Payment of quite high interest rates for credit affects the cost-accounting interests of enterprises, while the banks possess an important instrument for influencing the reinforcement of financial discipline and reducing default payments to both suppliers and for bank loans.

One condition of credit operations is the provision of loans only for payment against payment documents accepted by the purchaser. As is known, the acceptance is the agreement to pay; it is an important document in cost accounting, serving to control fulfillment of contractual obligations by the supplier. Practice shows that, unfortunately, still not all associations and enterprises meticulously observe the rules for effecting accounts operations. Suffice it to say that each year purchasers refuse to accept account documents involving a sum of about R15 billion, and a number of suppliers are still trying to claim payment from the bank for unreceived accounts documents.

The improvement of cashless monetary accounting is an integral element in the broad system of measures aimed at improving efficiency in the use of working capital. The CPSU Central Committee and USSR Council of Ministers decree of 12 July 1979 provides for a rise in the level of planning control over working capital. In particular, with the agreement of the USSR Ministry of Finance, during the period 1979-1980 industrial ministries were obligated to calculate and confirm economically substantiated normatives for working capital for production associations and enterprises. At the same time, the size of working capital had to be brought into line with the normatives (replacing part of the normatives with bank credit if necessary). This decree stresses the importance of using bank credit to form not only temporary above-normative stocks of commodity and material values and expenditures but also the normative for nonreduced stocks. Credit operations for these kinds of stocks that enterprises always hold does not signify that credit is being deprived of its basic attribute, namely repayability. This is guaranteed by the fact that loans are made for payment or the formation of stocks of raw materials or other kinds of value being received, and are repaid when these raw materials are used or finished output is marketed.

The great contribution of credit in the formation of working capital places greater requirements for the organization of control over the results of the economic activity of each borrower. In this connection, the growing role of the bank interest rate for credit should be noted. To supplement measures to improve the economic mechanism, on 21 April 1980 the USSR Council of Ministers adopted a decree "On Interest Rates for the Use of Bank Credit." Interest rates differ depending on the nature of the credit, taking into account the features of the borrowers, and also in order to create greater cost-accounting responsibility for the rational use of borrowed assets and their on-time repayment. In particular, the interest rates have

been raised for credit required as a result of shortcomings in economic activity, violation of repayment schedules or nonretention of working capital. For example, for loans to meet a temporary deficit in working capital, the interest rate has been raised from 7 to 8 percent in industry, from 2 to 6 percent in construction, and from 2 to 4 percent in trade. The interest rates set for long-term loans differ depending on the course of planned task fulfillment: for credits for capital investments when measures are implemented with the periods set the rate is 1 percent annually, while for ahead-of-schedule completion the rate is 0.5 percent; if planned periods are not met the rate is 2 percent, and if loans are defaulted, 5 percent.

Improving effectiveness in the use of interest rates for credit is undoubtedly playing a noticeable part in the entire business of improving the credit mechanism and in its more effective use to solve the major national economic tasks set by the CPSU 26th Congress.

FOOTNOTES

1. PRAVDA 5 Mar 81 p 6
2. L.I. Brezhnev. "Otchetnyy doklad Tsentral'nogo Komiteta KPSS XXVI s'ezdu Kommunisticheskoy partii Sovetskogo Soyuza i ocherednyye zadachi partii v oblasti vnutrenney i vneshney politiki. 23 fevralya 1981" [Accountability Report of the Central Committee to the CPSU 26th Congress and the Next Tasks in the Field of Domestic and Foreign Policy. 23 February 1981], Moscow, 1981 p 54.
3. L.I. Brezhnev. *ibid* p 57.
4. V. Alkhimov, "Bankovskaya sistema SSSR v deystvii" [The USSR Bank System in Operation], KOMMUNIST No 8, 1980 p 35.
5. N. Barkovskiy. "Rol' bankovskogo kredita v povyshenii effektivnosti proizvodstva" [The Role of Bank Credit in Improving Production Efficiency], Moscow 1980 p 22.

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INDUSTRIAL DEVELOPMENT AND PERFORMANCE

ECONOMIST EXPLAINS PRODUCTION DYNAMICS

Moscow *PLANOVOYE KHOZYAYSTVO* in Russian No 5, May 81 pp 66-72

[Article by Candidate of Economic Sciences L. Gorenman: "Factors in the Formation of Production Capacity"]

[Text] The "Basic Directions in the Economic and Social Development of the USSR for 1981-1985 and for the Period Up to 1990" have posed the task of improving the utilization of production capacity, raising the shift factor for machinery and equipment operation and bettering norm setting for all production resources.

Capacity is the basic indicator in planning the volume and structure of the production program, in setting technically sound standards for the use of labor and material-technical resources and in planning the economic results from the operations of the enterprises and sectors. The reliability and reality of the approved plan indicators and the objective assessment of the potential capacity of an enterprise to turn out products depend upon how sound are the data concerning production capacity. The capacity indicator is essential for disclosing proportions between the enterprise shops and sections as well as the lack of coordination in the production capabilities of the individual sectors.

Without information on the production capacity of enterprises it is impossible to solve the questions of regional and sectorial placement of the productive forces, production specialization and concentration as well as intra- and intersectorial cooperation. For this reason improving the methodology for measuring production capacity and an analysis of the main factors which influence its development as well as the use indicators are of exceptionally important national economic significance.

The necessity of reviewing the methodological questions in determining production capacity is also necessitated by the circumstance that at many enterprises the product output volume often exceeds the capacity stated in the statistical reporting. This methodological error became widespread at the enterprises of the Kazakh building materials industry. This can be seen, in particular, from the fact that in recent years their capacity, according to the report data, has been utilized by over 100 percent. Such an "exceeding" of capacity does not reflect the true state of its use but rather shows shortcomings in determining its amount.

In accord with the decree of the CPSU Central Committee and the USSR Council of Ministers on improving the economic mechanism, there has been an increase in the

role played by planning calculations for the use of production capacity. However, there are various opinions as to the definition of a number of concepts relating to the characteristics of production capacity. The absence of clarity in solving the questions which are fundamentally important for assessing the possibilities of an enterprise has caused the presently-existing situation whereby the category of "production capacity" does not play that role in the production management system which it should play in accord with its national economic significance.

Practice has shown that only in very rare instances is capacity the starting point in planning a production program. This indicator is largely used for informational and analytical purposes. The current system for encouraging the growth of production efficiency at a majority of enterprises does not involve the level of capacity utilization.

The correct use of the production capacity indicators in planning and incentive practices depends significantly upon the accepted understanding of the conditions and factors determining its level. The "Basic Provisions on Calculating Production Capacity at Operating Industrial Enterprises and Production Associations (Combines)" approved in 1977 by the USSR Gosplan and the USSR TsSU [Central Statistical Administration] state that by production capacity at industrial enterprises one understands the maximum possible annual product output in the range for the report period conforming to actual output and for the planned period according to that established in the plan with the complete utilization of production equipment and areas considering the measures being implemented (for the report period) and planned (for the planned period) to introduce advanced production methods and the scientific organization of labor. The given formulation emphasizes the dependence of production capacity upon the product range and assortment. This is the first and most important factor which determines the amount of capacity.

Presently there are various viewpoints on the question of accounting for this factor in the enterprise capacity calculations. Certain economists have proposed that it be determined from the optimum product range corresponding to the maximum utilization of installed equipment while others say this should be done from the planned product range.

First of all it is essential that primary in the planning of production is the need of the national economy for a specific product or the production capabilities of an enterprise. Which of the requirements considered in the above-given definition of production capacity is more important: the planned product range and structure used in calculating capacity or ensuring the full utilization of production equipment?

In calculating for the planned product range and structure, capacity plays an auxiliary role as it serves as the basis for realistically carrying out the set production program. But the plan for producing one or another product is a dynamic value which changes year after year and even more frequently. With other conditions being equal, enterprise capacity can change rather abruptly depending upon the product range and its labor intensiveness. At the same time the more the product structure corresponds to the specialization and structure of equipment at the given enterprise, the higher its load factor and the greater the production capacity. The choice of the product range whereby a rational load factor is achieved for the entire range of interrelated leading groups of machinery and equipment functioning in the unified production line must be considered the optimum product range.

In calculating production capacity, it would be wrong to set as an indispensable condition a maximum load factor for all types of equipment. To achieve a situation where each installed machine is fully loaded is virtually impossible as at each enterprise to one degree or another there is a discrepancy between the equipment structure and the structure of the produced product. Moreover, various types of equipment play a varying role in the production process and in the structure of the machine tool fleet. For this reason a rational equipment load can be understood as the maximum aggregate (general) load on the range of leading types of machines, ensuring an economically justified minimum of losses from the incomplete utilization of individual types of equipment.

In this regard one must scarcely absolutize the demand of the current regulations on calculating capacity for the complete use of equipment in terms of time and productivity. With complicated multistage production, not all the equipment comprising the system of machines should be used 100 percent. In certain instances the production of multioperation articles involves an incomplete load for individual types of equipment. This applies particularly to machine tools with a periodic nature of their use. For example, in producing reinforcing framing for reinforced concrete products, such machines as press shears and rod benders are used only 20-30 percent of the shift. There is no need for their fuller use. For this reason the capacity of the system of machinery does not correspond to the total capacity of these machines.

Since in producing one or another product the load factor varies for the different machines and units, only with a strictly determined product ratio which corresponds most to the structure of the equipment fleet can one achieve the fullest use of the entire system of leading machines and, consequently, ensure minimum labor intensiveness (machinery intensiveness) for a unit of product. The optimization of the product range for this criterion is also essential because the methods of producing the same type of product differ at the enterprises. For example, at reinforced concrete products plants, interior wall panels can be manufactured by the flow-unit, conveyor, vibro-rolling and multiple-form methods. There are more than ten different ways to manufacture prestressed beams for the roofs of production buildings.

Depending upon the given production methods, labor (machine) intensiveness will change for a product and this also entails a change in the amount of capacity. Here it is essential to consider that the indicator of machine intensiveness expresses the expenditures of machine time on producing a unit of product and does not sufficiently reflect the rationality of the production organization. Since the enterprises employ equipment which differs in terms of productivity and cost, it is advisable to determine machine intensiveness by the value of these machines, machine tools and units. At present, plant capacity for the production of reinforced concrete products, inert materials and brick is characterized by a common indicator reflecting the production volume and expressed in thousand cubic meters of reinforced concrete, sand, crushed rock, millions of brick and so forth without any description of the product structure. But the production, for example, of 1 m^3 of hollow flooring slab is not equivalent in terms of labor intensiveness, costs and other characteristics to the production of 1 m^3 of beams or frame members; 1 m^3 of construction sand cannot be considered the equivalent of 1 m^3 of washed or graded sand. For this reason the range of the produced product must be accounted for in conditional physical (conditional cost) terms using conversion factors for a chosen standard.

With other conditions being equal, production efficiency will be higher the better the equipment is used. A rational load on all the equipment is achieved only with an optimum product range in the corresponding quantitative ratios. The amount of enterprise capacity must be determined precisely for this range.

The calculating of production capacity on a basis of the optimum product range not only increases the incentive for the enterprises to better use the fixed capital but also creates conditions for the more rational distribution of production for various product types between the individual enterprises.

However, in planning practices there are frequent instances when the planned product range does not correspond to the full load for equipment existing at the enterprise and then the capacity recalculated for this product range will differ from the optimum. Since a deviation in the planned range from the optimum can be caused by arising new needs of the national economy, it is advisable, in addition to the capacity calculated on the basis of the optimum range, to also determine capacity for the set product range. This will make it possible to establish the amount of losses arising as a result of violating enterprise specialization and to correctly assess the use of production capacity. An effort should be made so that the planned product assortment (range) comes as close as possible to the optimum variation.

Frequently deviations from enterprise specialization can be caused by such objective factors as a change in the demand for producing certain types of products, the necessity of renewing the range of the produced product and so forth. Deviations from the plans can also be observed in the composition and structure of installed equipment. Nevertheless, it is advisable to put into practice the determining of enterprise capacity from the optimum product range and its structure. Naturally in such calculations one should be guided only by the socially necessary, nonobsolete products.

Of course, capacity calculated for an optimum product structure cannot be constant and is influenced by the demand for the product and technical progress both in the production sphere and in the consumption sphere of this product. Consequently, this capacity should be calculated periodically, in keeping with the fundamental changes in the production conditions and the social demand for the enterprises' product.

The determining of optimum capacity and the comparing of it with capacity calculated from the planned (actual) range are particularly important for multirange production as well as production involving a produced product structure which changes comparatively often. Among the latter are enterprises producing prefabricated reinforced concrete products the production plans of which are significantly subject to changes in the nature and volume of construction, and primarily the plants producing reinforced concrete elements which are part of construction organizations (trusts or main administrations).

Particular attention must be paid to the question of the working time fund which is used in calculating capacity. In accord with the current instructions on figuring capacity, the working time fund for continuous types of production is determined from calculating the full calendar time minus time on repair and technical halts. For discrete production, the calendar time fund is reduced by the normed time of planned repair halts as well as for the number of days off and holidays.

Thus, the amount of production capacity as the maximum volume of annual output depends upon interruptions in work and can, with the same technical parameters of the equipment and its composition, change as a result of the decision taken on the amount of the working time fund.

In practice there are rather frequent instances of deviations from the operating hours set in calculating capacity. Often the production volume includes products produced on days off and on overtime. In such an instance an illusion is created of proper order in the use of capacity. The equipment use indicator at certain enterprises often exceeds 100 percent for this reason.

Since capacity is calculated for certain working hours which are not always adhered to in practice, the production volume which exceeds the amount of capacity has begun to be shown in the statistical reporting as product produced during nonworking hours. This reduces the reliability of the data characterizing the amount and use of production capability. For example, the 1978 report balance on production capacity at the Kazzhelezobeton [Kazakh Reinforced Concrete] Association showed an output of 36.6 million brick units for large wall panels during working hours and 50.1 million units during nonworking hours, with a capacity equal to 37.7 million units. At the same association, the production of wall materials during nonworking hours was 15 percent of the production volume during working hours.

For disclosing the actual potential, capacity must be set starting from the maximum working time fund for the equipment considering the minimum but actually acceptable time required for planned repairs and established on the basis of the current standards and an analysis of the actually spent time in carrying out planned preventive repair at enterprises with a progressive repair organization. Then there is no need to consider the extra hours time. The working time fund figured in this manner should be applied in determining the capacity for all types of production, regardless of its character, discrete or continuous. A unified time measurement is maximal and it will make it possible to establish the natural capacity limit and reduce the dependence of enterprise potential upon operating hours.

Along with the indicators for annual capacity, in our view, it is essential to introduce an indicator for average hourly, average monthly or daily capacity. A calculation for the maximum working time fund will make it possible to compare the potential of the enterprises and the results of their operations.

The need in determining the amount of capacity to consider the maximum time fund is also explained by the fact that for various types of production different operating conditions are employed at the enterprises depending upon the demand for a specific product as well as upon the availability of manpower. This impedes a comparative assessment of enterprise operations. Moreover, rather frequently the standard operating hours recommended by the sectorial instructions and the annual equipment operating time fund are less than the actual.

Thus, with a standard annual operating time fund of 5,500 hours for a SM-816 press for molding silicate brick, the actually worked time at the Aktyubinsk Plant for Silicate Wall Materials and in the silicate brick shop of the Kustanay Reinforced Concrete Products Combine was 7,160 hours. The actual operating time of one SM-816 molding press for seven silicate brick lines was 5,980 hours a year. The annual

operating time of one autoclave used for calculating the capacity of the silicate raw materials plants in accord with the sectorial instructions equals 7,986 hours. This level has been exceeded at 40 percent of the nation's silicate brick plants. At 13 plants, only 1 of the 126 autoclaves was operated an average of over 8,500 hours. An analogous situation is observed in other types of production.

An analysis of enterprise operations indicates that the amount of production capacity is also influenced by the level of material wear on the equipment. This is manifested both by a gradual decline in equipment productivity as a result of its natural aging as well as by an increase in the time the equipment remains under repair and a shortening of the cycle between repairs. Consequently, on the one hand, capacity is annually increased by carrying out technical organizational measures,¹ and on the other there is a natural process of a decline in the real production capacity of the enterprise. This capacity fluctuates particularly on the eve and after equipment repairs and as a result of this the technical performance of the equipment is significantly restored.

Since the major overhaul cycle for a larger share of equipment is 2-5 years and there is equipment with a varying duration of the repair cycle in the machine tool fleet, at each given moment individual types of equipment will have a varying operating time fund and this leads to fluctuations in the amount of capacity. Moreover, with a rise in the productivity of other units put into operation after a major overhaul there is a corresponding decline in the productivity of some machines and units during the period of completing the repair cycle, that is, on the eve of the next major overhaul.

With a large amount of the same type of equipment in the production subdivisions, these rises and falls of productivity related to measures to maintain them in working order because they are spread out over time will be mutually offset and not have a substantial influence on the amount of capacity. With a limited quantity of equipment this factor is of important significance and it must be considered. In this instance, its negative consequences can be compensated for by technical organizational measures to intensify the production processes and improve repairs.

The next factor which determines the amount of capacity is the quantity and productivity of basic production equipment. Precisely this has the greatest impact on the amount of production capacity. In accord with the existing provisions, the calculation should incorporate all production equipment assigned to the shops including equipment not in operation as a consequence of breakdowns, repairs, modernization, underloading and so forth. Here the quantity and structure of the available equipment should correspond to one of the basic principles of production organization, proportionality. Since the enterprise, shop or section is equipped not simply with a certain number of machine tools, machinery and equipment but rather with a system of machines which are in a space and time relationship and are interdependent, any changes in the structure of the available equipment will be reflected both on the amount of production capacity and on the level of its utilization.

¹Analysis of production capacity dynamics at the republic building materials enterprises shows that as a result of implementing technical organizational measures each year enterprise capacity is increased by 0.5-3 percent.

The capacity of enterprise subdivisions is calculated from the technical (design) or achieved progressive productivity standards for basic equipment, labor intensiveness, the use of production areas and for the rates of finished product and raw material output. Equipment productivity used in calculating capacity is an important factor determining the amount of capacity. In practice, in calculating capacity more often indicators are used for the technical (specification) or designed productivity of the equipment regardless of whether these indicators have been improved or not. Often the actual production capabilities of the equipment, as a result of modernization, exceed the design or specification productivity. Nevertheless the capacity is figured from the understated indicators thereby creating a certain "reserve" for the eventuality of a possible deterioration in operating results.

We feel that in calculating capacity consideration must be given to the technical productivity of equipment. If the latter is overstated as a result of an improvement in the organization of production and labor, specific modernization of the equipment and so forth and this higher productivity is manifested sufficiently stably over at least 3 months, the achieved progressive level of equipment productivity must be considered in the calculation of capacity. If this equipment has undergone standard modernization, as a result of which its technical operating parameters (including productivity) have been changed, then in determining capacity one must consider the technical productivity according to the plans of the standard modernization or the best indicators achieved in the given sector under analogous production condition, that is, with the same quality of raw products, fuel and production of the same types of product on this equipment.

In those instances when the productivity indicators set for one or another type of equipment have been surpassed as a result of an improvement in the organization of production and labor, production capacity is calculated using the newly elaborated progressive indicators and rates based on the permanent achievements of production pacesetters. As the permanent achievements one can use the indicators for the productivity of equipment (units) which are at least 20-25 percent of the best achieved daily outputs from the equipment (units) and in the absence of daily output the average monthly output for the 3 best months or the best quarter of the previous year.²

In certain types of production, capacity is figured on the basis of the labor intensiveness standards. In the event that lower labor intensiveness indicators have been achieved by the production pacesetters as a result of employing advanced forms and methods for the organization of labor, then the established standards must be adjusted for the progressive level of their fulfillment. The latter is the average percentage of the fulfillment of the standards set by the leading group of workers who are at least 20-25 percent of the total number of workers in the given profession for the period of the best quarter of the year. The current labor intensiveness standard for manufacturing articles, in being divided by the progressive level of the fulfillment of the standards, is employed in calculating production capacity.

²The Instructions on Compiling Annual Balances for Production Capacity at Operating Industrial Enterprises of the USSR Gosplan and the USSR TsSU mention the need to consider indicators for the report year. In our view, this is wrong. The indicators of the previous year must be considered.

The quality of the subjects of labor has a substantial influence on equipment productivity, the material and machinery intensiveness of production. Significant changes in the qualitative characteristics of raw products, materials and fuel are directly reflected in the length of the production cycle and, consequently, in the amount of the enterprise production capabilities.

The production capacity of an industrial enterprise is determined from the capacity of the leading production shops, while the latter as well as the capacity of a shop is determined from the capacity of a leading production section, while the capacity of a section is determined from the capacity of the leading equipment groups. Since enterprise capacity is calculated from the lower production element to the higher, one can conclude that enterprise capacity will ultimately be determined by the capacity of the equipment group, that is, the capacity of a plant with a value of several tens of millions of rubles will depend upon the capacity of the machine tool group. This is scarcely correct, as this reduces the importance of the remaining production stages at the enterprise.

Proceeding from the fact that various types of equipment and subdivisions at an enterprise play a varying role in the production process, in calculating capacity there is the practice of isolating the leading units, sections and shops by which one understands those where the basic production operations are performed in manufacturing the finished product. But modern production is characterized by a complexity and multiplicity of production operations which at times are almost uniform but are carried out on different equipment in different shops and sections. The amount of the enterprise production capacity as a whole will depend upon the criterion for putting various production elements into the category of leading ones. In our view, the proportional amount of the value of the group of equipment in the total value of production equipment and the proportional amount of labor expenditures (man-hours or machine-hours) in the process of producing the product (the equipment of auxiliary and service shops and systems should not be considered in the calculation) can serve as this criterion. An integrated indicator calculated on the basis of these proportional amounts will reflect the carrying out of the most labor- and machine-intensive production operations and the place of this equipment in the value of the active portion of fixed capital.

For each sector and type of production, a list of leading shops, production stages, sections and equipment groups is established and capacity is determined from these. The sectorial instructions frequently give several leading production elements. For example, the instructions for calculating the capacity of ceramic wall material enterprises sets two leading production stages--drying and firing. The capacity of the enterprise is determined from the minimal capacity of one of them. Such a practice is procedurally incorrect, as it makes it possible to vary the amount of production capacity thereby concealing internal production disproportions. With several leading shops or sections it would be more correct to determine enterprise capacity from the largest of them. However, it must be considered that the Basic Regulations on Calculating Production Capacity for Industrial Enterprises and Production Associations (Combines) make no provision for the presence of bottlenecks in the production process in calculating capacity.

By a bottleneck one understands a lag in the capacity of individual groups of equipment, shops or sections behind the capacity of the leading shops or sections which

determine the capacity of the enterprise or shop. Capacity is determined considering the measures to eliminate the bottlenecks and possible production cooperation.

In practice there have been rather frequent instances when the capacity of auxiliary and service subdivisions exceeded the capacity of the leading shops and the latter were a bottleneck in production. Often there is the opposite picture where the discrepancy between the capacity of the leading shop and the capacities of the other production subdivisions at an enterprise is too great and the elimination of this discrepancy requires significant capital investments but this cannot be fully carried out. For this reason, in determining the amount of capacity and in being guided by the capacity of the leading production element, it is more correct to calculate the advisability of eliminating the discrepancy in the production capacity of individual production elements and the possibility of expanding cooperation ties.

Let us examine two hypothetical examples.

At an operating silicate brick plant with a capacity of 100 million units (in terms of autoclave productivity), the installed molding equipment (presses) provides an output of only 90 million units. The lime shop, the sand storage area and the steam power system are capable of providing a production of not more than 90 million units of brick.

At a similar plant the presses could mold 90 million units of brick while the capacity of the limestone shop and boiler and the size of the storage areas would make it possible to produce 100 million units.

In both the first and second instances, according to the instructions, plant capacity would be considered 100 million units. For the first plant, all those divisions shops and sections the capacity of which is below the total autoclave productivity would become bottlenecks. Would not too much money be required to eliminate these bottlenecks to "raise" them to the established plant capacity? With such a situation the plant could never produce more than 90 million units of brick a year without the "widening" of the bottlenecks. Would it not be simpler to eliminate the extra capacity thereby removing the production disproportion. In the given instance, for this reason, it would be better to consider the capacity of this plant not 100 million units but rather 90 million units, having disassembled the extra autoclaves which would almost be unused while the enterprise must pay a capital payment to the budget.

A different picture exists at the second plant. Here the press system is the bottleneck. And there can be one solution, namely, to install the lacking number of presses to bring production to 100 million units of brick.

For this reason, in determining enterprise capacity there must not be a formal approach to the classifying of the various shops and sections in terms of bottlenecks, rather, in our opinion, special technical and economic calculations must be run to disclose the advisability of either "widening" the bottlenecks or eliminating the surplus equipment which, although it may be basic equipment, cannot be used at full capacity under the existing conditions.

In this instance it is a question not of eliminating the bottlenecks but rather removing the disproportions in the production process and a corresponding decline in the amount of production capacity is completely possible. For discovering the discrepancy, the production capacity of all the enterprise subunits must be figured. This must be done not only for analyzing the proportionality of capacity at the enterprise production subdivisions but also for disclosing opportunities for its fuller loading proceeding from the needs of the given enterprise and cooperating with other enterprises to produce a commodity product or perform industrial services.

Factors	a	b
Increase in amount of equipment for production areas:		
At leading production areas	+	
In remaining enterprise subdivisions		+
Improving production processes and intensification of them:		
In leading sections, shops	+	
In auxiliary shops		+
Modernization of operating equipment and raising its productivity	+	+
Elimination of bottlenecks in production process		+
Raising level of production specialization	+	
Change in product range and labor intensiveness	+	
Improving organization of labor	+	+
Providing personnel		+
Improving organization of material and technical supply		+
Providing power resources		+
Raising shift factor		+
Improving equipment utilization over time		+
Changing quality of raw materials	+	
Improving quality of finished product	+	+
Improving production planning		+
Improving material incentive system		+

Key: a--Influence on amount of capacity
b--Influence on level of capacity utilization

According to the current regulations, reserve equipment is not considered in calculating production capacity. It is used in those production areas where, in the first place, there is the highest probability of frequent breakdowns and, secondly, limiting production lines and equipment have been installed the halting of which could lead to a stopping of the entire production chain of product output. With a sufficiently high level of production organization and a definite reserve of capacity

for such equipment, it is possible to fully dispense with duplication. The experience with a number of clay and silicate brick plants confirms this idea.

The above-given definition of capacity points out that it is figured considering the use of progressive production methods and the most advanced organization of labor (by progressive production methods one understands the use of optimum production processes for the given specific conditions and which contribute to the fuller utilization of equipment, to reducing labor expenditures and the material intensiveness of production as well as to improving product quality). It is difficult to agree with this idea.

In the first place, it cannot be directly considered in calculating capacity. Secondly, the optimum production methods for the specific conditions may or may not be progressive. Enterprises, even those equipped with obsolete equipment, possess definite potential for producing a product needed by society. Thirdly, if one production method, let us assume not an optimum one, is employed at an enterprise while capacity is calculated for another, optimum one, then the product output indicators will be incomparable with the calculated capacity.

Thus, it is essential to distinguish the factors which influence the amount of capacity and the factors which influence the level of its utilization. The table [see previous page] gives a classification of the major production-technical and organizational factors influencing the amount of capacity and its utilization.

A clear delimitation of the nature of the effect of these factors will help in sounder production planning and, consequently, the fuller utilization of production capacity.

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CSO: 1820/196

RESOURCE UTILIZATION AND SUPPLY

GOSSNAB OFFICIAL URGES RECYCLING OF INDUSTRIAL WASTE

Moscow PLANOVYE KHOZYAYSTVO in Russian No 6, Jun 81 pp 80-83

[Article by V. Kaintaris, first deputy chairman of Gosnab USSR: "Utilization of Secondary Resources"]

[Text] One of the most important ways of economizing on material resources in the national economy and therefore of raising the efficiency of public production is rational utilization of secondary raw materials. In Basic Directions of Economic and Social Development of the USSR for 1981-1985 and for the Period to 1990 there is set a task: to continue work of bringing into operational rotation secondary material, fuel and power resources, consumer wastes as well as byproducts; to develop the material and technical base of organizations engaged in the procurement and processing of secondary raw materials.

The systematic policy carried out by the party and the government on improving the utilization of secondary resources has made it possible to achieve certain results in this field. During the years of the 10th Five-Year Plan, the volume of procurement and processing of secondary raw materials compared to the Ninth Five-Year Plan grew by 3.5 million tons. There were collected and processed (in millions of tons): marketable scrap and wastes of ferrous metals—236 (economic gains amounted to 4.3 billion rubles), spoiled paper—10.8, secondary textile materials—2.8, cast-off tires—1.5, broken glass—2.6 and polymer materials—0.112. Savings were attained of 43 million cubic meters of commercial lumber, about 2 million tons of natural and synthetic fibers, 350,000 tons of synthetic rubber, 830,000 tons of soda ash and 350,000 tons of gasoline.

According to calculations of the Ministry of Timber, Pulp and Paper and Wood Processing Industry, use of spoiled paper coming from the production of paper and cardboard solely in 1980 and used in place of fresh semifinished material permitted savings in the country of 3.8 million cubic meters of commercial timber, 3.6 million gigacalories of heat and 500 million kilowatt-hours of electric power. For the creation of appropriate procurement capacities, timber haulage and production of semifinished products, an expenditure of 2.3 billion rubles of capital investment was required and for the production of the indicated amount of heat and electric power about 800,000 tons of conventional fuel were used. As the result of the sale of secondary raw materials, there were produced in the country industrial products and consumer goods in an amount that exceeded 5 billion rubles, which resulted in the saving of more than 2 billion rubles due to the difference in primary and secondary raw materials.

In the construction and modernization of enterprises, more than 197 million rubles of capital investment, or more than double that of the Ninth Five-Year Plan, were used for the procurement, processing and reprocessing of secondary raw materials. This made it possible to significantly renew fixed production capital of the given enterprises, particularly their active part—machinery and mechanisms.

During 1976-1980, more than 700 production installations of light metal construction and a total floorspace of more than 600,000 square meters were erected and put into operation; 50 industrial enterprises and shops were built or modernized; there were installed more than 140 flow lines in them for processing of secondary raw materials. Production capacities were put in operation for the fabrication of nonknit materials (floor coverings, insulation foundations, sheet wadding and napkins) in an amount of 44.1 million square meters a year and also for the processing of secondary polymer materials in the amount of 13,100 tons per year.

The reequipping and putting into operation of capital production and storage buildings made it possible to significantly improve the work conditions of workers, to boost their productivity, to reduce shipping costs of secondary raw materials and to increase the load capacity of motor and railroad transport.

During the years of the 10th Five-Year Plan, 138.2 million cubic meters were utilized of returned wooden and cardboard crates (in terms of conventional round timber), which is 20 million cubic meters more than during the Ninth Five-Year Plan. The country's needs for transport crates were taken care of 40 percent with reused ones; this made it possible to save from felling more than one million hectares of timber and to achieve a saving of 2.5 billion rubles for the national economy.

The economic effect of using refractory scrap in the national economy amounted to 92.5 million rubles. For the five-year period, a total of 8.9 million tons of this scrap was used a second time (annual production of refractory products), which made it possible to effect a saving of 14.2 million tons of magnesite powder, quartzite, silicon carbide and clay.

During 1976-1980, a total of 5.7 million tons of used petroleum products was collected, that is, fourfold more than during the Ninth Five-Year Plan. Total profits from their reprocessing amounted to 250 million rubles. Blast-furnace slag replaced about 170 million tons of various kinds of nonmetalliferous raw materials.

According to data of the USSR Central Statistical Administration, in 1979, production wastes amounting to 5.6 billion rubles (based on potential use price) went into national-economic use. At the same time, the country has significant reserves for boosting the effectiveness of the economy through fuller and more rational use of secondary resources. The national economy's rapid development has been responsible for the formation of a significant amount of production and consumption wastes as well as of byproducts, especially in the raw-material sectors of industry. Many wastes have been accumulated in waste dumps of enterprises that could be used as raw materials. The Basic Directions emphasize the need of developing capacities for the production of construction materials from the ash and slag of thermal electric power stations, metallurgical and phosphoric slag, wastes of mining sectors of industry and coal concentration factories.

At enterprises of the USSR Ministry of Ferrous Metallurgy, 500 million tons of slag have been accumulated. Output of metallurgical slag from current production exceeds 70 million tons. Outlays on the maintenance of slag dumps amount to more than 300 million rubles a year.

The USSR Ministry of Nonferrous Metallurgy has more than 300 million tons of slag in its dumps. Of this 130 million tons consist of slag from copper smelting and lead plants requiring prior extraction of nonferrous metals and about 180 million tons of slag from nickel plants suitable for immediate processing into construction materials. Current output of metallurgical slag at ministry enterprises amounts to 18 million tons. The maintenance of dumps requires an expenditure of up to 20 million rubles per year.

About one billion cubic meters of ash and slag have been accumulated by thermal electric power stations of the USSR Ministry of Power and Electrification. In 1980 their wastes reached 90 million tons. The construction of new thermal electric power stations, the conversion of existing ones with liquid or gas-type fuel to solid fuel, as well as higher ash-content and deteriorating quality of coal result in increased wastes in the form of ash and slag. A significant quantity of short supply steel pipe goes into the removal of ash, while expenditures on the maintenance of dumps in 1980 amounted to more than 130 million rubles.

A vast amount of waste is produced in mining and concentration of coal and shale at enterprises of the USSR Ministry of Coal Industry. Approximately 3 billion cubic meters of pit rock and waste from coal mining are to be found at 2,000 rock dumps. More than 60 million rubles per year are spent on maintenance of dumps.

The volume of wastes at enterprises of the Ministry of Chemical Industry is significant. Just in the production of phosphoric acid, about 20 million tons of phosphogypsum are thrown into dumps as waste. In 1979, costs of maintenance of phosphogypsum dumps reached approximately 40 million rubles.

Direct outlays on the maintenance of dumps of the indicated production operations, according to rough estimates, amount to almost 300 million rubles per year. Moreover, approximately 2,500 hectares of land are taken up by dumps. The ecological condition of the natural environment is deteriorating: a significant quantity of equipment, transport, energy and labor resources is diverted.

In 1980, use of metallurgical slag by the USSR Ministry of Ferrous Metallurgy amounted to 47 million tons (63 percent of current output) and of the USSR Ministry of Nonferrous Metallurgy—2.2 million tons (12 percent) and of ash-slag wastes of the USSR Ministry of Power and Electrification—8.2 Million tons (9 percent). Wastes of the production of phosphoric fertilizers, products of simultaneous mining and concentration of coal, open-cut mining debris of metallurgical and other enterprises are not used.

Practice shows that it is possible to make from byproducts and wastes of production a wide range of different construction products and materials: cement, crushed stone and sand, wall and finishing materials, mineral wool products, porous fillers, concrete and so on. Slag, ash and wastes from the extraction of minerals are used in the restoration of land, filling in of mining excavations and gullies, building of road beds, airports and sports structures. A part of the ash of thermal electric

power stations and metallurgical slag is used in agriculture for liming of acid soils and as fertilizer.

The chief reason for unsatisfactory use of secondary raw materials lies in inadequate attention and a bureaucratic approach by ministries to the establishment of wasteless production operations, more complete use of natural resources and also utilization of wastes and byproducts that have accumulated at dumps. Due use has not been made of the experience of metallurgical plants working without the hauling of slag to dumps; Dovolipetskiy, Kramatorsk, Azovstal', Zhdanov imeni Il'ich and Nikopol' Ferroalloy.

Use of industrial wastes is also reduced by the limited volume and poor coordination of scientific research on this problem. Existing instructions for the utilization of wastes of production (especially metallurgical slag) are based on an obsolete technology with extremely unfavorable work conditions; new, efficient technological process are slow in being developed; the production of appropriate modern equipment and machinery has not been organized.

At the present time, the volume of procurement and processing of secondary raw materials has been set for 1981, 1985 and 1990. Targets have been provided for a number of ministries and departments for the creation of the necessary capacities for these purposes, the development and fabrication of technological equipment and so on. As of 1981 a section has been introduced for the use of secondary raw materials in state plans of economic and social development of the USSR as well as in the plans of USSR ministries and departments, union and autonomous republics, krays, oblasts, cities and rayons, enterprises and construction projects. Thus, their employment has become the object of centralized planning. But analysis of the 1981 plan shows that separate ministries (USSR Ministry of Ferrous Metallurgy, USSR Ministry of Nonferrous Metallurgy, USSR Ministry of Timber, Pulp and Paper and Wood Processing Industry) have provided for the allocation of capital investment for these purposes in an amount of not more than 1-3 percent, while the majority have not even included such a section. In this matter, one does not feel the guiding role of sectorial departments of Gosplan USSR, although the effectiveness of processing of secondary resources is undoubted.

At the present time, gosplans of union republics have departments for utilization of secondary resources. It is clear that they together with republic gossnabs are bound to play a decisive role in the coordination of this work. The first steps in this field, particularly in the Ukraine, Moldavia and Belorussia permit us to hope that such joint work would be most useful for additional involvement of raw-material resources in the national economy. It is all the more necessary because there does not exist so far a unified approach on the part of ministries and departments in organization of work for the sale of secondary raw materials and the creation of a corresponding plan section.

The Ministry of Electronics Industry, the Ministry of Radio Industry, the Ministry of Electrical Equipment Industry, the Ministry of Maritime Fleet and other ministries restricted themselves in the creation of this section of the sectorial plan to targets for turning over traditional forms of secondary material procured by the organization of Gossnab USSR and the USSR Central Union of Consumer Societies, while at enterprises of most of them wastes are formed in significant quantities from sawing timber and woodworking, used oils and other petroleum products and the like.

The Ministry of Tractor and Agricultural Machine Building, the USSR Ministry of Trade and a number of construction ministries do not deem it necessary to include in the plan a section on the utilization of secondary raw materials in view of the insignificant amount of the wastes.

Cases exist where certain work is done in a sector for the creation of a technology and equipment for waste processing and reports are made of the introduction of such developments into practice, but nothing concerning this is to be found in the section on secondary raw materials in the plans. In particular, the USSR Ministry of Coal Industry reported that during the 10th Five-Year Plan technological processes and equipment were created for the processing of open-cut mining rocks, concentration wastes from coal concentration factories and utilization of mine methane. Such scientific-research and planning-design developments are planned to be carried out during 1981-1985. But neither these developments nor the results of their realization in the form of products produced after inclusion of waste processing in the above-mentioned section of the sectorial plan are being included.

The related facts indicate that in a number of sectors an apathetic attitude is displayed in regard to the problem of maximal use of secondary resources in operational turnover and the necessity of its comprehensive interconnected solution beginning with the planning of prescribed indicators both for ministries and departments as a whole and for each association and enterprise individually. For this reason Gosplan USSR should jointly with Gosstat USSR prepare in the immediate future and put out methodological directives on planning of indicators included in the plan in the section on utilization of secondary raw materials.

Natural resources that would be easily accessible have been exhausted to a significant degree. Their extraction is becoming increasingly more expensive, and special importance is to be attached to questions not only of utilization of production wastes, consumption of byproducts but also complex processing of mineral resources, ores of ferrous and nonferrous metals, petroleum, gas, timber, coal and so on. A necessity exists for the creation of essentially new processes that make it possible to eliminate or reduce technological stages during which the chief amount of wastes is formed, that is, technologies involving little or no waste.

An important problem is the formation of solid everyday wastes, amounting today to about 40 million tons. Their removal alone costs the state 600 million rubles annually. In this connection, the creation of trash-burning plants does not appear to be altogether justifiable. Enterprises are needed for treatment of everyday wastes and extraction of all valuable components.

The utilization of production and consumption wastes is closely connected with protection of nature inasmuch as the most rational method of dealing with pollution of the environment in the opinion of Soviet and foreign specialists is the use of wastes in industrial production. Pollution of the environment with wastes is acquiring a global character since not only the planet's natural resources but also the ability of the biosphere to absorb polluting substances are limited.

Studies of specialists show that the use of waste paper makes it possible not only to preserve forest resources but also to reduce the use of water for technological needs by 15-61 percent, that of energy—60-70 percent, to reduce air pollution by

50-73 percent, that of water by 25 percent and to reduce the amount of generated solid wastes by 39-100 percent. Cleaning away of printer's ink and other technological processes of treating printer's ink result in less pollution of the environment than operation of pulp-chemical enterprises. Processing of glass wastes (with a 60 percent content of it in the mixture) reduces air pollution by 6-22 percent), formation of solid wastes—by 79 percent, power output by 6 percent, pure water by 50 percent and natural resources by 54 percent. In the production of 100 tons of steel from scrap metal, there is a reduction in: energy consumption—60 percent, ejection of wastes into the atmosphere—6.5-fold, water pollution—fourfold, air pollution—86 percent, the amount of generated wastes—sixteenfold.

The use of secondary wastes in production, while reducing its harmful action on the environment, permits as well a more effective utilization of fuel and power resources and saving of capital investment. For example, in the making of aluminum alloys from scrap, consumption of electric power is less than in its production from ore by a factor of 23, that of conventional fuel—by a factor of 7.4; production cost is reduced by a factor of 2.5 and proportionate capital investment by a factor of 8; bronze-brass alloys require correspondingly less electric power by a factor of 5, conventional fuel—by a factor of 3.4 and proportionate capital investment by a factor of 10.

Gossnab USSR together with Gosplan USSR and interested ministries and departments have worked on questions of the use of production and consumption wastes in the national economy for 1981-1990. It was determined that by 1990 it will be possible to increase the use of metallurgical slag of ferrous metallurgy by 30 million tons, marketable scrap and wastes of ferrous metals by 12 million tons, flotation residues at ferrous-metallurgy enterprises by a factor of almost 30, rubber wastes—by a factor of 15, cast-off tires—by a factor of 3.6, secondary polymer materials—by a factor of 13, spoiled paper and textile materials—by a factor of 2, wastes of logging, sawing and woodworking—by 15 million cubic meters and so on.

The solution of the examined problem solely on the basis of large-tonnage types of wastes in the immediate decade will make it possible to obtain an additional national-economic effect in excess of 14 billion rubles. For this reason material and financial resources should be allocated for the accomplishment of the prepared proposals.

The work done by the party and the government on rational and economic use of our wealth, in particular, secondary raw materials, stems from a long-term and purposeful program reflecting concern for future generations of the Soviet people. Special attention is required of the Komsomol Central Committee, the USSR Ministry of Education, the USSR Academy of Pedagogic Sciences, the USSR Ministry of Higher and Secondary Specialized Education and the USSR State Committee for Vocational and Technical Education: bringing up children and young people in the spirit of a thrifty attitude toward physical assets and natural resources, preparation and issue of special educational programs and scientific-pedagogic and scientific-methodological literature. It is even more necessary to train specialists with higher or secondary specialized education in the field of organization of procurement, processing and reprocessing of secondary raw materials. In our opinion, it would be advantageous for Gosplan USSR, the USSR Ministry of Finance, the USSR State Committee for Labor and Social Problems, the USSR State Committee for Prices and the AUCCTU to work up a complex of measures for increasing the economic incentives

of state, cooperative (including kolkhozes), public organizations and enterprises as well as the material interest of citizens in increasing the collection, processing and reprocessing of secondary raw materials.

The use of wastes in production is not only an economic but also an important moral and ecological problem. It is becoming one of the central aspects of mass educational work among the population. In implementation, its attention should be stressed on the vital necessity for a thrifty attitude on the part of our society to physical assets and natural resources, including the rational utilization of secondary resources.

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CSO: 1820/208

REGIONAL DEVELOPMENT

PARTY SECRETARY DISCUSSES OVERALL REGIONAL DEVELOPMENT

Moscow **PLANOVOYE KHOZYAYSTVO** in Russian No 6, Jun 81 pp 34-43

[Article by P. Fedirko, first secretary of CPSU Krasnoyarskiy Kraykom: "Complex Development of the Productive Forces of a Region"]

[Text] The decisions of the 26th CPSU Congress and the Summary Report of General Secretary of the CPSU Central Committee L.I. Brezhnev again emphasize the need for accelerated development of the country's eastern regions, including Krasnoyarskiy Kray. This is important because the regions of Siberia and the Far East are acquiring ever greater importance in providing the country with fuel, energy, mineral resources. It is planned to increase their comprehensive development and specialization and to adopt measures for the rationalization of economic interrelations.

For Krasnoyarskiy Kray, these general goal prescriptions of the congress for the long range have been concretized in a decree of the CPSU Central Committee and the USSR Council of Ministers "On Measures for Further Complex Development During 1981-1990 of the Productive Forces of Krasnoyarskiy Kray." This document contains a broad multi-purpose program for the development of the kray's economy and culture through the formation of regional production complexes and the development of industrial centers and regions.

During the new 10-year period, production output of the kray's industry is to be increased 60-65 percent. The production of the most important types of industrial products is growing: electric power, coal, excavators, rotary complex, electrical equipment, chemical fiber, lumber, saw-timber, pulp and so on.

Fast-rate development is planned in the kray of a fuel and power complex and the creation on its basis of new power-intensive production operations of nonferrous and ferrous metallurgy and of the chemical and petrochemical industry. Construction is to be completed in the Sayan Regional Production Complex area of the Sayan-Shushenskaya GES with a capacity of 6.4 million kilowatts and the Maynskaya Hydroelectric Power Station. At the Angar-Yenisey Complex start-up is scheduled of the first units at the Boguchanskaya and Kureyskaya GES and in the area of establishment of the Kansk-Achinsk Fuel-Power Complex the start-up of the Berezovskaya GRES-1 and also capacities at GRES-2. Here it is also planned to complete the construction of the Berezovsk Coal Pit No 1 and the Irsha-Borodinsk Coal Pit No 2 and also to carry out the reconstruction of functioning pits.

Nonferrous metallurgy retains a leading role in the kray's economy. The Noril'sk Ore Mining and Smelting, the Achinsk Alumina and the Sorsk Molybdenum combines will be expanded and modernized; the Gorevsk Ore Mining and Concentration Combine and the following plants have been built: the Sayan Aluminum, the North Angara Periclase and the Tuim Plant for Processing of Nonferrous Metals.

Ferrous metallurgy will be developed primarily through increased production of special steels and the output of especially pure iron powders, creation of new capacities at existing mines and construction of factories and plants.

In the kray, reequipment is planned of all sectors of the national economy, primarily through the creation of a large machine-building base specialized in the production of machinery and equipment for the regions of Siberia and the Far East. By the end of the 11th Five-Year Plan, machine builders will have put out 42 dragline excavators and a rotary complex with a productivity of 5,250 meters per hour, 30,000 motor-vehicle trailers, 235 metallurgical and special cranes, 40,000 large-load containers, 30,000 grain-harvesting combines, 300 roller-dragging machines and so on.

We know that by the opening day of the 26th CPSU Congress Krasnoyarsk combine makers had released the first batch of the new Sibiryak SKD-6 combine, which has been put into series production.

Difficult tasks face the collective of the Krasnoyarsk Heavy Excavator Plant, the construction of which is proceeding at a fast rate. In 1982, machine builders are scheduled to put out the first excavator of the EKG-12.5 type and the rotary complex and then to increase their production. This is because the Berezovskiy Coal Pit No. 1, to which the first excavators are to be sent, will begin operating in 1983.

The complex of electrical equipment enterprises in Minusinsk will undergo accelerated development and so will other machine-building plants.

The chemical and petrochemical industry will develop due to the completion of the Achinsk Petroleum Refining Plant, increased production of rayon fibers at the Sibvolokno Plant and the expansion and modernization of existing enterprises and construction of new enterprises.

Krasnoyarskiy Kray is the largest timber base of Siberia and the whole country. The output of timber-procurement workers also goes to the world market. This creates the prospect of increased utilization of timber resources through the construction of large enterprises for the complex processing of wood.

Further development is planned of the light, food and other sectors of industry, expansion of freight and passenger hauling by all forms of transport, improvement of the means of communication, strengthening of the food base and attainment of a rate of growth of production that would satisfy the needs of the population for food products.

In the struggle for realization of the set tasks, a special role is assigned to capital construction. As in the past 10-year period, much is going to be built. The volume of capital investment in the 11th Five-Year Plan will grow significantly in the 11th Five-Year Plan. To attain what has been planned, it will be necessary to

increase the capacity of construction and installation organizations and enterprises of the construction and construction-materials industry and to ensure high growth rates of construction.

The program of complex development of productive forces of the kray sets big tasks for its scientific institutions. First of all, it is planned to expand research connected with the development of the kray and the solution of the scientific-technical problems of KATEK [Kansk-Achinsk Fuel-Energy Complex], the Sayan Regional Production Complex and others.

At the 26th CPSU Congress words were again heard to the effect that the chief goal of the party's economic policy is all-out improvement of the living standard and well-being of the Soviet people. Much has been done in this regard in Krasnoyarskiy Kray. By 1985 it is planned to have the housing of the kray's city dwellers reach 13.5 square meters versus 12.2 square meters in 1980 and to make housing available with a total floorspace in excess of 7.2 million square meters. Construction is planned of new schools, children's preschool institutions, hospitals, clubs and palaces of culture and sports structures. The network of health resorts, sanatoriums, Pioneer camps will be expanded and the trade and consumer services of workers will be improved, and so on.

The program of Krasnoyarsk's second 10-year plan [desyatiletka] is quite complex and large. Its implementation demands of communists and all of the kray's workers special discipline, efficiency, organization and improvement in all work relating to the development of Krasnoyarsk productive forces. The solution of these tasks is being greatly helped by utilization of the experience coming from the fulfillment of our first 10-year plan.

As we know, intensification of the economy and raising of its efficiency require the comprehensive development of all parts of the national economy. Achievements in boosting of the economy and culture and raising of the people's living standard depend on proper territorial proportions. Without this, it would be impossible to ensure a big growth in production efficiency and the successful solution of the totality of present social problems. "The very character of the tasks facing us," L.I. Brezhnev said, "is such that their solution as a rule requires coordination of the efforts of many sectors and economic regions and includes the realization of a whole system of different measures."¹

All this was taken into account by the kray's party organization when, with the participation of the Council for Study of Productive Forces and the Institute of Complex Problems under Gosplan SSSR, the IENII [expansion unknown] under Gosplan RSFSR, the Institute of Economics and the OPP [expansion unknown] of the Siberian Department of the USSR Academy of Sciences and a broad group of scientific-research and planning organizations, ministries and departments, it developed a multi-goal, interrelated program of comprehensive development of the kray's productive forces during 1971-1980. Reinforced by a decree of the CPSU Central Committee and the USSR Council of Ministers, the program provided for the development of the rich natural resources of the kray through the formation of powerful regional production complexes and industrial centers, with consideration being given to the simultaneous development of the production and nonproduction spheres. Thorough study of the basic questions of economic and social development of the kray and its individual rayons have created conditions for finding effective planning solutions.

1. L.I. Brezhnev, "L. I. Brezhnevskiy kurs. Rech' i stat'i" [Leninist Course. Speeches and Articles], Vol 3. Moscow, Politizdat, 1973, p 269

Undoubtedly, elements of complexness and rational location of production were even formerly inherent in the kray's economy, but the Krasnoyarsk 10-year plan has set before us new, more complex tasks. The purposeful complex development of productive forces has united into one whole the economic, social-political, demographic, geographic and many other factors. The character and possibilities of the kray's local organs' participation in the planning of the development of the national economy and the practical realization of set tasks have been determined.

At the CPSU Kraykom's plenum, there was approved a long-term program for the operation of party, soviet and operational organs and scientific and cultural institutions. With subsequent changes dictated by need, it has become the basis of all our activity. In accordance with this program, party committees locally outlined a plan of operations; the decisions adopted by them were studied by communists at their meetings at primary party organizations.

For the determination of a clear-cut picture for each of the newly formed or developing industrial regions, general schemes were compiled. They permitted local party and soviet organs to concretely engage themselves in the progress of local construction and to carry out precise control over observance of the principle of complexness in the formation of regions and over ensuring the proportional development of all sectors of the national economy.

The CPSU Kray Committee and the krayispolkom determined ways of improving the work of local planning commissions. The kray planning commission has started to carry out planning of the kray's entire economy, irrespective of departmental subordination and with the aid of scientific and planning organizations to carry out elaboration of bases for the most important problems relating to the development of the kray's productive forces and also of individual rayons, the formation of industrial centers and so on.

In working out drafts of plans, local planning commissions solved a large number of problems relating to the coordination of the work of enterprises and organizations located on their territories, which made it possible to actively influence the operational activity of enterprises, to determine more clearly resources for boosting efficiency of public production and to undertake measures for improving the use of material, financial and labor resources.

An interdepartmental commission was created under the kray ispolkom, which included the leading specialists of planning, operational and scientific organizations. It examines proposals of ministries on construction of new enterprises, expansion and modernization of existing enterprises and ensures coordinated actions by sectorial and territorial administrative organs aimed at improving the use of production capacities, development of the production and social infrastructure and implementation of measures for conservation of nature and the solution of other intersectorial problems.

In the course of preparing and implementing the complex plan, we were able to make an economic study of territorial resources and to develop valid rayon planning schemes, to work out schemes of resettlement in the kray, general plans of cities and suburban zones, to analyze the development and specialization of agriculture by rayons, to evaluate water resources and to determine methods of their effective use.

The forming of very large regional production complexes, industrial regions and centers while taking into account the combination of rich fuel and power and other raw-material resources have become a general policy in boosting of the kray's productive forces. We had to create the Sayan, Kansk-Achinsk and North Yenisey regional production complexes and 11 industrial regions. Their development insured the growth of production of those products which are of important value for the country—cheap high-energy coal, electric power, nonferrous and ferrous metals, wood processing and many kinds of petrochemical and chemical products.

In the kray, a policy is being implemented of concentration and specialization of production. Modern production and scientific-production associations have been created which together with large plants and combines produce almost 90 percent of the total volume of industrial production.

Important elements in the development of the kray's economy were complexness and the desire to utilize more fully local raw-material resources and to process them to their end products.

Thus, of nepheline ores, deposits of which we have in sufficiency, we produce alumina at the alumina combine and process it at big metallurgical enterprises into aluminum and rolled aluminum; we then partially assemble the finished products and send them to their consumers. A silicate brick plant has been built for the utilization of the wastes of the Sorsk Molybdenum Combine; this has resulted in annual savings to the national economy of more than one million rubles. We are trying to introduce such "chains" in all sectors of the national economy.

In solving the key problems of the economy, the CPSU Kray Committee is working to have economic growth increasingly attained through higher labor productivity, acceleration of scientific-technical progress and fuller utilization of production capacities due to economy and thrift in order that qualitative factors determine more completely the content and results of operation of each enterprise and association.

The practical work of the CPSU Kraykom, party organizations and local soviets of people's deputies has as one of its most effective methods of fast and complex solution of worthy social-economic problems the approval of concrete programs developed with the help of the kray's specialists and scientists jointly with interested ministries and departments. More than 50 such programs have been adopted. These programs include: development of a construction industry and industrial railroad transport, bolstering of interkolkhoz construction organizations and improvement of specialist training.

A special place is occupied by scientific-technical programs.

Complex programs have been developed for the solution of the scientific-technical problems of Noril'sk Ore Mining and Metallurgical, Sorsk Molybdenum, Gorevsk Ore Mining and Concentration Combines, Sayan Regional Production and Kansk-Achinsk Fuel and Power Complexes as well the programs "Forest Resources of Siberia" and "Petroleum and Gas of Eastern Siberia"; a draft was worked out of a complex program for the introduction of the achievements of science and technology into the kray's national economy to 1990.

As a result of the programs' implementation, means of transport and communication have acquired a channeled development and the building and reconstruction of motor roads have been speeded up. During the 10th Five-Year Plan alone, growth of general-use motor roads with hard improved surfacing amounted to almost 3,000 km, which significantly improved motor-transport services for both the national economy and the population. Emergency measures have been carried out for the development of port and pier services in the Yenisey basin; disproportions of river and shore services were eliminated thereby. A number of airports of local airlines have been built or modernized; obsolete types of aircraft have been replaced by new comfortable and fast ones--the Tu-134, the Yak-42 and the Il-62. New direct airlines have been opened to the country's cities and resorts. The network of automatic long-distance telephone and telegraph services were expanded, and the number of postal enterprises with complex mechanization has been significantly increased. The number of radio locations and the range of television broadcasting in regard to the kray's residential centers have grown. A program of color television is in operation.

The operation of baking, fish, food, meat and dairy industry enterprises has been improved, and their assortment has been expanded.

A special place in the realization of the indicated programs has been given to questions of improvement of trade, consumer services, public education, culture and cadre training. The basis of all the programs is the principle of complexness in the development of the kray's national economy.

During the 10th Five-Year Plan, a plan of the kray's economic and social development for 1976-1980 was compiled and successfully realized; it encompassed the most important aspects of economic and cultural development on its territory. Practically all cities and rayons, industrial enterprises, transport, construction organizations, kol-khozes and sovkhoses of the kray had similar plans. During the 10th Five-Year Plan alone their number grew sixfold compared to the Ninth Five-Year plan and totaled 1,500 plans.

These regional plans have become the basis of the organizational activity of party, soviet and operational organs for the development of socialist competition of workers for the fulfillment of the targets of the state plan; they have become an active force reinforcing sectorial management of the economy.

A certain amount of experience has been accumulated in rational allocation of capital investment, creation of a progressive structure and improved use of producer goods. The level of construction management is higher, a big program of measures has been implemented of shifting it to a new and higher technical and organizational basis. These measures have contributed to improvement of the structure of contracting organizations, development of the construction industry and the construction materials industry, creation of a needed network of specialized planning and scientific-research organizations, development and strengthening of their production base, all-out introduction of scientific-technical progress into construction, employment of modern progressive structures and construction materials, development of completely fabricated construction, wide-scale introduction of complex mechanization and automation of construction processes and dissemination among all collectives of domestic and foreign experience in organization of construction production and constant improvement of forms and methods, style and principles of party management of construction.

During the years of the Krasnoyarsk 10-year plan, we learned a great deal, discovered much for ourselves, enriched our work with new forms and methods of management of the economy and acquired a certain experience in the complex development of the economy and culture. It helped us to increase the volume of industrial production 2.3-fold and in machine building, metalworking and ferrous metallurgy—2.7-fold, to double the output of nonferrous metals, to develop such new production operations as car and container making and the motor-vehicle, electrical equipment and tool industry. On the basis of automation and mechanization of production and introduction of the results of scientific research, labor productivity grew more than 1.6-fold.

Solely during the 10th Five-Year Plan, more than 14 billion rubles of capital investment were utilized. More than 450 large production capacities and facilities went into operation. Special attention was paid to the development of agriculture for the purpose of satisfying the needs of industry for agricultural raw materials and of the rapidly growing population for food products. Agricultural commodity production has increased 29 percent.

The complex development of the kray's productive forces provides at the same time for the creation of modern production facilities and the construction of well appointed housing, cultural and consumer institutions as well as the solution of problems connected with the rising living standard of the workers.

Social aspects have for us an especially important significance in connection with the specific natural and climatic conditions of the kray. People here frequently have to live and work far from cultural centers under taiga and Arctic tundra conditions. It is impossible not to take into account the growing demands of workers for well appointed housing, good furniture and clothing, visiting of theaters and concert halls. All this calls for the creation of such living conditions that would completely compensate for the uniqueness of Siberia's natural conditions and remoteness from the country's main cultural centers.

These problems are solved in the kray along two lines. On the one hand, they involve accelerated construction of housing and expansion of the social, cultural and living base and, on the other, improvement of the operation of institutions of the nonproduction sphere. On the first line, strict control is maintained over observance of the principle of completeness. The construction of housing and social, cultural and consumer facilities is considered as being as responsible a task as the erection of industrial buildings.

Steady attention to the solution of social problems contributes to raising of the living standard of the workers of the kray. Thus, during the 10th Five-Year Plan alone, the population's monetary income increased 22.4 percent (and only 17 percent for the country as a whole). Average monthly wages in 1980 were 214.6 rubles, and the pay of kolkhoz farmers was 174 rubles. Public consumption funds have increased. During the 10th Five-Year Plan more than 2.2 billion rubles from the kray's budget was spent on public education, health care and culture. Now more than 260,000 persons vacation or are treated at sanatoriums, rest homes and centers.

During the five-year period retail trade grew 27-3 percent (the growth amounted to 850 million rubles). Consumer services volume increased 1.5-fold, including that in rural localities, which increased 52 percent.

A broad program of construction of housing and social and cultural facilities is going on. During the past five-year period, 800,000 persons obtained new accommodations and improved their housing conditions. There were put to use dwellings with a total floorspace of 8.4 million square meters, schools for 90,000 pupil places and children's preschool institutions with 35,000 places.

Amenities and maintenance of the housing fund have markedly improved. Our cities and villages are looking better. In Krasnoyarsk alone during the five-year period microrayons sprang up in all parts of the city consisting of well-appointed houses with improved plans; there are more and more schools and kindergartens meeting the most modern requirements; an opera and ballet theater is in operation; construction of a large sports complex is coming to an end. The appearance of Abakan and Achinsk, Kanak and Jazarovo, Lesosibirsk, Igarka and other cities is changing.

Much has also been done in increasing the production of consumer goods, expanding their assortment and improving their quality. As a result, their production increased in 1980 to 1.8 billion rubles, while the production of cultural, consumer and household goods grew by 30 percent. Consumers are showing a strong demand for household refrigerators from Krasnoyarsk Machine-Building Plant imeni Lenin, aluminum ware from the metallurgical plant, furniture, silk and wool fabrics, clothing, pianos, children's toys and so on.

Measures are being taken for protection of the environment, prevention of air pollution and protection of water bodies. "Chistyy Yenisey" [A Clean Yenisey] is a complex program that is being developed to make this mighty Siberian river a recreation zone for workers and to preserve its fish resources. Many other social tasks are being successfully solved.

All this would have been impossible to do without the aid of scientists and expanded scientific-research work. For this reason there was created in the kray a developed system of scientific and sectorial scientific-research and planning-design institutions; their material and technical base has been strengthened.

The scope of work for the development of productive forces has acutely brought up the question of cadre training, the solution of which now has a program for the creation of new vocational-technical schools, tekhnikums and VUZ's as well as additional departments at already existing educational institutions. During the years of the Krasnoyarsk 10-year plan, more than 200,000 skilled workers and tens of thousands of specialists with high or medium level skills were trained, utilizing all forms of instruction.

The concern of the party and the government for the development of the kray's productive forces evokes among Krasnoyarsk people a feeling of pride and gratitude and the desire to work with all their strength and energy. From the very beginning of Krasnoyarsk's first 10-year plan, communists and all of the kray's workers have undertaken with special ardor and enthusiasm the fulfillment of what was outlined; they have launched a broad socialist competition for the attainment of the highest results in labor. As a result, many valuable initiatives and undertakings have come into being. Many of them have been approved by the CPSU Kray Committee and local party organs and have been widely disseminated among workers. Such initiatives as "Two five-year plans in one," "If it pertains to Krasnoyarsk, it is outstanding!", "For

high effectiveness of the end result while solving intermediate tasks ahead of schedule and in a qualitative manner," and others have assumed a truly mass character.

The leading collectives of Krasnoyarsk, Achinsk and Minusinsk have launched a competition with the slogan "We shall give the Motherland more products through early start-up and mastery of the production capacities of the 10th Five Year Plan." This patriotic initiative, which had its start in 1976, has been supported by the party kray committee. Economists have estimated that through the introduction of this initiative the country will receive during the five-year plan additional production valued at one billion rubles. Thus, a movement began which came to be called in the kray the movement for the Krasnoyarsk billion. Its development required much organizational and political work on the part of the CPSU Kraykom, city and rayon party committees, soviet and operational organs, public organizations and a high level of consciousness and discipline by the kray's best labor collectives. As a result, leading collectives were able to produce during the 10th Five-Year Plan additional production valued at 1.2 billion rubles.

They did not rest on their achievements. In the course of the socialist competition for a worthy greeting of the 26th party congress, pacemakers introduced the initiative: "For producer goods—a full return, for production capacities—full utilization." Owing to its wide-scale development, they committed themselves to give to the Motherland during the 11th Five-Year Plan additional production in the amount of one billion rubles. The new movement found active support among the workers and is now becoming increasingly widespread at enterprises, construction projects and kolkhoses and sovkhozes of the kray.

A new form of organization of socialist competition, which had its inception in the kray is, is the creative association of Sayan hydropower builders and the working people of Leningrad. Its importance was well stated by L.I. Brezhnev in a talk with members of the bureau of the CPSU Kraykom in the spring of 1978: "I was told about the cooperation of the enterprises and organizations of Leningrad with the builders of the Sayan-Shushenskaya GES. The goal of such cooperation was approved by the Central Committee because it has resulted in reduction of the building time of the hydroelectric power station."²

L.I. Brezhnev advised that the valuable experience be disseminated among other production collectives. As the result of purposeful work by party organizations, the undertaking of the Krasnoyarsk and Leningrad dwellers became widespread among other of the kray's new construction projects.

The organization of socialist competition is being constantly improved and developed. In the kray today, creative reports of labor collectives, which are striking, bringing back to mind the event to each of its participants, are being used as displays of labor achievements of collectives, honoring of production pacemakers and innovators and totaling of the results of the competition. A competition is gathering

2. "Poyezdka Leonia Il'icha Brezhnev po Sibiri i Dal'nemu Vostoku. Mart—aprel' 1978" [Leonid Il'ich Brezhnev's Trip Through Siberia and the Far East. March-April 1978]. Moscow, Politizdat, 1978, p 16.

momentum for work without ladders, for ahead of schedule fulfillment of plans and commitments of the 11th Five-Year Plan.

The many-sided activity of the kray party organization for improvement of socialist competition contributes to a large degree to the successful fulfillment of the tasks of forming regional production complexes, erecting very important production facilities. It is enough to say that as the result of the creative association of plants producing parts five of the first hydrounits of Sayan-Shushenskaya GES were put into operation ahead of schedule.

The accomplishment of the complex tasks set by the Krasnoyarsk 10-year plan also required a search for new, effective forms and methods of political-educational work. A concentrated expression of this was the complex ideological support of the erection of most important national-economic installations, the beginning of which was proposed in the period of preparation for the start-up of the first unit of Sayan-Shushenskaya GES. Today this form of our ideologists has become a tradition and is employed in preparations for the start-up of the next units of Sayan-Shushenskaya GES, in the erection of the facilities of KATEK [Kansk-Achinsk Fuel-Energy Complex] and the Krasnoyarsk Heavy Excavator Plant.

The first Krasnoyarsk 10-year plan was an economic experiment conducted by the state under the conditions of Siberia; it proved the effectiveness and feasibility of such an approach to the solution of economic tasks.

But in analyzing the results of development of productive forces of the kray, we see that the complex plan of territorial development unfortunately is not always obligatory in regard to fulfillment by all ministries. In the allocation of resources for the construction of common key installations and the creation of the social infrastructure a tenacious departmental character remains. Sectors try to reduce outlays on the erection of installations at the expense of nonproduction construction. The start-up times of installations are at times not kept, which hinders the utilization of the advantages of industrial centers.

Some ministries do not allocate adequate resources for protection of the environment (thus, the USSR Ministry of Nonferrous Metallurgy is delaying implementation of necessary measures). All this is intolerable under conditions of concentration of industry.

The results of the first complex program convince us of the fact that new capacities are slow in becoming operational at many enterprises and that in the majority of cases this is connected with lagging construction of housing and social-cultural facilities and that development of the kray's cities and rayons is proceeding irregularly. Some ministries and departments make miscalculations in the planning of capital investment and material-technical resources. Thus, the first section of the Achinsk Petroleum Refining Combine, enterprises of the Minusinsk Electrical Equipment Complex and others have not gone into operation in the prescribed periods.

There has been no success so far in complex utilization of all the raw-material sources; unfortunately, the conversion of agriculture to intensive methods of development is proceeding slowly; the kray's transport system is not being developed comprehensively. In a word, we, together with ministries and departments, have not entirely succeeded in creating a rational production and social-consumer infrastructure.

We see the prospects of the kray's further development as primarily lying in the elimination of this half completed work and also in the continuation of establishment of regional production complexes and industrial centers begun in the period of the first 10-year plan. The development of the Angara region is of great importance to us.

For the forthcoming 10-year plan, we count on acquired experience, but not everything in this big enterprise can be done solely by our own forces.

It is necessary for sectorial ministries, first of all the USSR Ministry of Power and Electrification, the Ministry of Coal Industry and the Ministry of Timber, Pulp and Paper and Wood Processing Industry in conformity with the tasks of raising the living standard of workers as set forth in the decisions of the 26th CPSU Congress as a fundamental party strategy, to ensure accelerating development of housing and social-cultural facilities in areas of regional production complexes and industrial centers of the kray. At the same time, it would be advisable for Gosplan SSSR to assume more rigid control of planning by sectorial ministries of the construction housing and civil facilities at all particularly important construction projects.

At the present time, the production of local construction materials, including those made from industrial wastes, is practically not included in the plans of complex development of regional production complexes and industrial centers. Inadequate attention is paid to geological prospecting of raw-material deposits for construction materials. It is extremely important to increase the direct influence of Gosstroy USSR on the development of construction science in the kray.

Special attention should be given to technological complexity, inasmuch as a number of technological processes, even in certain basic production operations, are being established without adequate consideration of local climatic conditions. Complex planning by the USSR Ministry of Timber, Pulp and Paper and Wood Processing Industry and by Glavmikrobioprom [Main Administration of Microbiological Industry] could eliminate significant losses of wood raw material for the national economy through the timely establishment for its processing and the introduction of wasteless and near wasteless technologies.

In our view, it is possible to improve territorial planning of the kray's economy through modification of sectorial planning. For the purpose of overcoming lack of coordination of the activities of different departments, it would be necessary to have a certain apparatus of Gosplan USSR on the territory of the kray. Only through joint efforts would we be able to fulfill the broad program of the second Krasnoyarsk 10-year plan and to more quickly put to use the rich natural resources of Krasnoyarskiy Kray.

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